

~~Revised and corrected~~
ESSAYS
AND
OBSERVATIONS

On the following

SUBJECTS.

VIZ.

On Trade.

—Husbandry of Flax.

—Raising Banks against
Tides and Floods.

—Hops.

Directions for making
Roads.

Instructions for making
Syder.

Observations on the Linen
Manufactory.

— on Dressing Flax.

—on Brewing.

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ESSAYS

ESSAYS

BY THE

DUBLIN SOCIETY.

N^o. I. *Tuesday, January 4th, 1736-7.*

TH E Gentlemen, who by a voluntary Association formed themselves into a Society, pretty well known at present by the Name of the DUBLIN SOCIETY, having already given the Publick some general Account of the Design that first brought them together, and which they ever since have unweariedly pursued; it will be sufficient for the Purpose of this Paper, to inform the Reader of the particular Reasons which have now engaged them to give their Instructions a new Form, and to endeavour the farther Improvement of Husbandry, and other useful Arts, by weekly Observations.

It may seem at first Sight, that Pamphlets and the larger Kinds of Essays are better fitted to convey Instructions of this Nature, than the loose Sheets which they intend to publish for the future: 'Tis a plausible Objection against the latter Method, that the Connexion being interrupted, and the Directions to the Husbandman and others confined and cramped by the Dimensions of the Paper, something must probably be lost of that Clearness and Exactness which are absolutely requisite to make such Writings useful: But when the Thing is more attentively considered, the Advantages will certainly be found to lye all the other Way; and that, far from being more obscure, the Society's Instructions, by these Means will become more distinct and more implicit. In a Pamphlet it is expected

that the whole Subject, with its several Branches, be considered together, and brought under one View; thereby the Particulars are crowded, and the Attention of the Reader broken and divided by a Multiplicity of Objects. In single Papers it is quite otherwise; the Writer may confine himself to as few Heads as he thinks fit; and if any one of Moment offers, make that the Business of the Day, and keep his Reader steady to the Point before him. Should the Gentlemen of this Society write any Thing on Tillage, in the Shape and with the Title of a Treatise, they must attend the Farmer in his Progress, from the Plough to the Flail; direct his Industry, from the choosing of the Seed, to the saving of the Crop; and of Consequence neglect some material Observations, or swell their Works to an unreasonable Size. In the Way now intended, both these Inconveniencies may be consistently avoided: Nothing that is not material need be mentioned in these Papers, and for that very Reason nothing that is really so need be totally neglected, or superficially considered.

Were Husbandry, and other Arts in their Infant State among us, either not at all, or no more than just discovered, complete and regular Treatises would then indeed be necessary, to give a general Knowledge of them to the Artist, and to guide him, Step by Step, where every Thing were new to him: But as this is not the Case, and a few perhaps excepted, the Improvement of Arts already known, and not their Introduction, is the Thing wanted in this Kingdom: Separate Papers, where the several Errors and Deficiencies in our present Management will be considered singly, and therefore more distinctly, seem to tally exactly with our Wants, and afford the likeliest Prospect of Success. Add to this, that the Perfection of all Arts consisting in minute Observances and little Niceties, they commonly escape the Artist, where the Instructions are voluminous, and his Attention taken up by other Observations, seemingly more impor-
tant;



tant; while by standing single they will be drawn into a stronger Light, and brought within the Notice of the Reader.

To these Advantages, arising from the very Nature of these Papers, must be added those which will accrue from the easier Distribution of them. Pamphlets fall into few Hands, and are useful to those only who are in a Capacity to purchase, and at Leisure to peruse them. But these shorter Essays, it may reasonably be hoped, will reach every Reader in the Kingdom.

Gentlemen of Fortune, and conversant with Books, cannot well be at a Loss for sufficient Directions in any Thing they undertake. They can command the same Means of Information with the Members of this SOCIETY; peruse the Discoveries of others, and make Experiments themselves: It would be therefore a Design of a very confined Advantage, to write only for their Use: The poorer Sort, the Husbandman and Manufacturer, are the proper Objects of Instruction, which can hardly ever reach them in any other Method than the present. A few, perhaps, there are, who might receive some Benefit from the many useful Books already extant on these Subjects, or from the larger Treatises, which the Gentlemen of this SOCIETY might have writ from Time to Time, had they adhered to their first Plan: But the Majority of our common People must have continued in their Ignorance, had not a Way been found of conveying Knowledge to the Poor, at a very easy Rate; and to the indolent or busy Readers in small Parcels.

Were the Gentlemen of the SOCIETY actuated by the mean Ambition of commencing Authors, then indeed their Observations had probably appeared in another Shape. But different Motives required a different Conduct. Their Intention is not to amuse the Publick with nice and laboured Speculations, or to enrich the learned World, with new and curious Observations; but, in the plainest Manner, to direct the

the Industry of common Artists; and to bring practical and useful Knowledge from the Retirements of Libraries and Closets into publick View: In short, to be universally beneficial is their only End; and whether they attain it by making new Discoveries, or publishing those already made; by encreasing the present Fund of Knowledge, or by conveying it into more Hands, is to them perfectly indifferent.

This, they hope, will be understood as an Invitation to all Persons, who truly love their Country, to throw in their Mite into the common Stock, by communicating to this SOCIETY their Experiments and Observations; their Objections, if they have any; and if they please their Doubts; any loose Hints which may occur to them, and whatever else may contribute to the Perfection of these Papers. *M.*

No. II. *Tuesday, January 11th, 1736-7.*

TH E natural Riches of a Country are certainly the Produce of the Soil, and the Labour of the Manufacturer; peculiar Advantages of Situation, or superior Skill in Trade, may indeed supply the Want of them imperfectly and for a Time, but can never be depended on as a full Equivalent for either, in Value or Duration: 'Tis therefore on the Riches of the Earth, and on those Improvements which they may receive from Art, that the Hopes of introducing Wealth among us must ultimately rest; and without we can force our Soil to yield better, and persuade our Artificers to extend their Industry to more Particulars, the present Poverty of the Nation can never be removed, and will probably encrease.

'Tis not to be expected that one single Manufacture, though, indeed, in a promising Condition, should support us any Time against the constant Drain of large and numerous Imports. This were the utmost we could hope, had we arrived already at that Perfection

fection in our Linens which Time alone and repeated Endeavours can bestow : To rely upon them now with an unlimited Dependence, and neglect the Diminution of our Imports, is expecting more than, in their present State, they can possibly perform. This is not to be understood as if it carried with it any remote Intention of discouraging the Linen Trade. The Gentlemen of the SOCIETY are abundantly convinced, that nothing else can be equally depended on, and that whenever Riches flow into this Kingdom, it must be through that Channel. The Design of the foregoing Observation is only to forewarn us of those many Obstructions in our Way, which have hitherto prevented the natural Effects of a growing Manufacture, and to engage us to remove them, by raising in our own Soil, and working with our own Hands, some of those numerous Commodities that are yearly imported from abroad.

'Till something of this Kind be successfully attempted, we only labour at our Looms for the Benefit of others, and drudge hard to enrich their Farmers and Artificers; while our little Wealth is insensibly consumed, and the Kingdom wastes under a lingering Disease.

It would be an inhuman Insult to expose our present Misery, and aggravate the Sense of it by the Prospect of a greater, were it not in our own Power to remove the Evils we now feel, and prevent those which we are threatened with : But as our Misfortunes are, in a proper Sense, our Faults, all, who truly love their Country, are concerned to set them in the strongest Light.

The natural Soil of this Island, and the Number and Ingenuity of its Inhabitants, would, under proper Management, make it as remarkable for Wealth, as it is now for Poverty.

There is no Country in the Northern Parts of Europe which it does not equal in Fertility, and most of them it remarkably excels. The richest of our Neighbours are only so far before us in the Goodness of their

their Crops, as they exceed us in the Culture of their Lands; and the Difference there is between us, is not originally in the Soil, but only in the Husbandman. No Kind of Growth, that can be reared under a Northern Sun, has miscarried in this Climate; and the few Trials we have made of late have all turned out to our Reproach, by evidently shewing, that it was only from our Indolence, that so many useful Crops were still unknown among us.

On the other Hand, the Dexterity of the Inhabitants is no Ways inferior to that of any other People. 'Tis neither Want of Understanding to invent, nor of Skill to execute, that keeps us so far behind them. Where we have applied ourselves with common Care, we have, perhaps, uncommonly succeeded: And though the Instances are few, because our Attempts themselves are so, yet a sufficient Number might be found to shew the Ingenuity of our Artists.

The Number of Inhabitants, in the more distant Provinces especially, is not as great as might be wished. But neither on the other Hand is it remarkably deficient; and were the wandering Spirit laid, which has unhappily possessed our People, and all the Hands we have, beneficially employed, a great deal might be done even with the present Stock, which would undoubtedly encrease in Proportion to our Riches.

This is our natural Condition: What Use we hitherto have made of it is an uncomfortable Enquiry. To judge of this Country by its Imports, far from thinking it fruitful and inhabited, one would be tempted to imagine that it was a barren Desert, destitute of every Thing but some straggling Herds of Cattle. Besides what they afford us, there is no Commodity whatever, Linen not excepted, of which some Quantities are not every Year imported. We, strictly speaking, trust to our own Growth for nothing, but are in every Point more or less dependent upon foreign Countries; lye at their Mercy for our very Food and Raiment, have our Bread from their Barns, and our Cloths from their Looms.

These

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These Reflections took their Rise from an Enquiry the DUBLIN SOCIETY lately made into the Nature and Value of our Imports, and from that honest Indignation, which every one must feel who loves his Country, to find them so numerous and so considerable.

Their Design in this Enquiry, was to direct their own Labours for the Good of their Countrymen; and to make their Instructions more eminently useful, by knowing first where they were most wanted. But instead of the Advantage they proposed, the surprising Quantity of our Imports has rather puzzled and perplexed their Views, than any Ways determined them. Where every Thing is wanted, 'tis not easy to decide what Particulars are most so. The Field is too wide to be regularly parcelled out, and our Necessities too many to wait a leisurely Enumeration. They have therefore altered their Design, and intend, in the next Paper, to lay before the Reader, in one View, a general Account of those numerous Commodities, which our Indolence alone has brought under the Head of Imports: And as nothing shall be there inserted which may not easily be raised, or at least, manufactured in this Kingdom, they hope it will be understood as an earnest Invitation to the many idle Hands among us, to choose from that Account, some useful Occupation for themselves.

Among the great Variety of beneficial Employments, which such a Survey of our Wants invites our Artists to attempt, 'tis hardly possible, but all the Willing and Industrious should meet with something to their Taste; and whenever they will properly apply themselves, they cannot fail of a Reward; since, at a moderate Computation, half the Wealth yearly drained out of this Kingdom, might, with proper Management, be kept in our own Hands; and above 500,000 *l.* thereby distributed among our Workmen, which they are, every Year, deprived of, by the superior Diligence of others.

No. III. Tuesday, January 18th, 1736 7.

A List of COMMODITIES imported Yearly into IRELAND, being such as may be either Raised or Manufactured therein, together with their Yearly Value, taken at a Medium for the three last Years.

DENOMINATIONS.		Medium of the current Prices.			Total.		
		l.	s.	d.	l.	s.	d.
A	L E and Beer, per Barrel		19		716	17	3
	Apples, per Bushel		2	4	156	12	7
	Bark, per Barrel		6	8	184	15	2
B	Battery, per 100 Weight	7	19		697	1	1
	Cards for Wool, per Dozen		10		436	17	6
	Chests, per 100 Weight		16	2	900	11	8
C	Coaches, Value				786	10	
	Coals, per Ton		12		411	15	13
	Copper-Plates, per 100 Weight	6			399	4	7
D	Cordage, per 100 Weight	1			29	7	9
	Wheat, per Quarter	1	13		54	13	19
	Barley and Malt, per Quarter	1	9		45	9	8
E	hull'd Barley, per 100 Weight	1	3		58		6
	Flower, per Barrel	1	4		20	12	
	old, per Yard		15		108	1	3
F	new, per Yard		2	6	229	19	
	Prunella, per Yard		3	6	430		6
	Shags, per Yard		4		122	6	2
G	Earthen Ware, Value				477	5	6
	Fabs, per Piece		2	6	743	7	6
	Flax undressed, per 100 Weight	1	5		340	18	9
H	Fustians, per End		14	6	287	1	7
	Bottles, per Dozen		1	4	52	5	18
	Cases, per Piece	1	10		194	12	
I	drinking, per Dozen		2		846	8	11
	Vials, per 100		6	8	359	22	3
	Rhenish Webb, per Webb	3			318	18	4
J	Glass Ware, Value				1919	18	8
	Gloves, per Pair		3		84	6	
	Gunpowder, per 100 Weight	3	5		230	18	2
K	Hats, each		15		396	10	
	Hemp undressed, per 100 Weight	1	4		119	17	4
	Hempseed, per Hogshead	1	5		22	4	4
L	Herrings, per Barrel		10		220	9	1
	Hops, per 100 Weight	4	10		409	5	4
	Houses for the Army and Coaches, &c.				4000		
M	unwrought per Pound		2	6	1576	3	9
	wrought per Pound		4		381	0	8
	Iron, per 100 Weight	24			426	10	12
N	Knives, each		3		519	70	
	Pots, each		6		105	9	11
	Scissars, per Grois	1	8		102	1	2
O	Scythes, per Dozen	16	2		198	10	10
	Small Parcels, Value				697	12	8
	Hard-ware, Value				3135	11	3
					D E.		

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DENOMINATIONS.		Medium of the current Price.			Total.	
		l.	s.	d.	l.	s. d.
Iron Ore, per Tun			14		1187	2 10
Gold and Silver, per Pound		4			524	8 1
Lace { Thread-bone, per Yard		1			7198	1 2
Lamp-black, per Pound			1	4	187	5
Lead { white valuing the Manufacture exclusive of the Material. per 100 Weight		1		4	1915	4 3
red Material. per 100 Weight		1	4		434	4
Liquorish, per 100 Weight		1			257	2 3
Linen, British, per Yard			2		197	5
Linen { Callicoes { stained, per Ell			4		613	4 8
white, per Ell			3		60	4
Cambric, per Ell			5	6	17933	4 3
Holland, per Ell			5		867	4 5
Keatings, per Ell			3	6	194	3 10
Lawns, per Ell			5	6	2598	1 20
Linen, per Hoghead					14593	10
Madder, per 100 Weight		1	10		3147	10 8
Military Ware, Value					5129	15 5
Needles, per thousand Dozen					374	14 1
Linseed, per Gallon			2		1437	12 6
Oil { Train, per Gallon				6	600	1 11
brown, per Bundle					312	10 2
Paper { cap, per Ream			3		816	5
printing, per Ream			2	4	2355	10
writing, per Ream			4		2357	14 2
Pewter, per 100 Weight		4	10		683	14 8
Saffron, per Pound		1	10		566	
Salt { Foreign, per Bushel			1		11663	14 4
white from England, per Bushel			1		12770	4 6
Seeds for Gardens, per Pound			3		2935	8
Silk Manufacture, valued exclusive of the Material					30691	10
Skins, Sheep per Skin			1	4	277	1
Soap, per 100 Weight		1	5		634	1 11
Stockings { Silk, per Pair			12	6	59	8 6
Worsted, per Pair					74	6
Sugar { Candy { valued exclusive of the Material. per 100 Weight		5			176	13 8
Loaf		5			343	9 3
Powder		15			2891	17 7
Syder, per Tun		4	10		1981	8 4
Thimbles, per 1000		2			65	19 7
Toys, Value					2432	2 11
Thread { Gold and Silver per Pound		2			5469	15 7
Silken Thread, per Pound		14			1489	4 10
whitened brown, per Pound		2	8		330	19 9
Tiles, per 1000		1	3		209	1 9
Upholstery-ware, Value					700	8 1
Wood, per 100 Weight			18		37	14 6
Barrel Staves, per 100		3	6		232	17 7
Balks, per 100	20				4819	10
Clap-boards, per 100	10				419	2 3
Clap-holes, per 100	10				61	1 1
Doors, per 100	2	10			12703	6 4
Houses, per 100	4				3089	
Plank, Value					1125	12 6
Timber, per Tun	2				4150	9 1
Wooden-ware, Value					1146	10

DENOMINATIONS.		Medium of the current Prices.		Total.	
Yarn Wyre	Brass, per 100 Weight	6	1	33	16 6
	Iron, per 100 Weight	12	10	21	6 0
	Latin, per 100 Weight	5	1	18	7 4 4
	Linen, per Pound	1	2	6	1 4 7
	Worsted, per Pound	4	6	14	1 11 7
Total				507	270 3

N^o. IV. Tuesday 25th, 1736-7.

BY the List published in the Society's last Paper, the Commodities yearly imported into this Kingdom, which may be raised in our own Soil, or manufactured by our own Hands, are estimated at 507,270 Pounds: But when we consider, that most of the Goods therein mentioned are rated below their real Value, and that great Quantities of them, being run or concealed, are not valued at all, we may very reasonably conclude, that the total Amount of these Commodities cannot be less than 700,000 Pounds.

It will appear very surprising, and is really a Matter of great Reproach to us, that we yearly pay such immense Sums for foreign Commodities, when we have it in our Power to furnish ourselves with Goods of the same kind by the Labour of our own People, who, for want of being so employed, are reduced to a poor and starving Condition.

But should we take a general View of all our Imports, there would arise new Occasion of Surprise and Reproach; the remaining Articles of Commodities yearly imported into this Kingdom, are chiefly Wines, Brandies, East and West India Goods; these with many other Branches, which we may particularly take Notice of hereafter, are considerably above the Value of 400,000 Pounds, and serve hardly any other Use than to gratify our Luxury.

By this short View of our Import Trade we find, that we consume yearly above the Value of a Million Sterling

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Sterling in foreign Commodities, which, far from being necessary or useful to us, are for the greatest Part destructive of our Trade, and Means of exhausting the Wealth of the Nation. More than half of them we can raise, or at least manufacture, where the Material is of foreign Growth, and the Remainder are only Superfluities, which might very well be spared.

The Commodities, which we export to purchase the Goods of other Countries, are chiefly Linen-Cloth, Linen and Woollen Yarn, Wooll, Beef, Butter, Hides and Tallow. All these, except the Linens, are not much removed from the State, in which we receive them from Nature, and undergo little or no Labour or Manufacture, and are necessary or useful to those Countries either for their Manufactures or Consumptions. But the greatest Part of the Goods we take from them in Exchange for ours are so far from being of Use to us, that they destroy the Industry of the Poor, and only supply the Luxury of the Rich.

Whilst we consume such great Quantities of foreign Commodities, we so far encourage and employ the Poor of other Countries, and starve our own.

As the Strength and Riches of every Country are founded on the Number, Frugality, and Industry of its Inhabitants, it should be the Aim and Business of every wise State to find Employment for their People. Where the Community are fully and properly employed they will not fail to be rich, and where any great Number of them are idle the whole will be poor.

The raising of Provisions for our Subsistence, and Materials for Manufactures out of our Soil requires the Labour of a small Part of our People only: but manufacturing the Materials, which we can raise at home, or purchase abroad, would give full Employment to all. And we ought chiefly to apply ourselves to Manufactures, since the Work of an Artificer is of more Value to the Publick than that of a common Labourer, and one Cargo of Manufactures may be worth

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worth ten others made up of Provisions and the mere Produce of Nature.

It has been an usual Complaint, and an Excuse for the Idleness and Poverty of our People, that we lye under great Restraints in our Trade, and have not sufficient Work to employ them in; but whoever looks into the aforesaid List will find many Articles, wherein all our spare Hands may be fully employed, by which they might get a comfortable Livelihood for themselves, and at the same Time save vast Sums yearly to the Kingdom.

This List will serve as a general Index, to shew which Commodities are in demand, and which are not, and may be a Direction to an Undertaker to choose such a Branch of Business as may turn to best Account.

We already raise or manufacture considerable Quantities of every Sort of the Commodities mentioned in the List, which is sufficient to prove that we do not want Skill, and we have many Advantages to enable us to extend our Industry much farther, and to supply ourselves with all we want, when we consider that the Price of Labour and Provisions is much cheaper with us, than in those Countries we trade with, that our Soil is very fit for producing every Thing we have Occasion for, and that we have many spare Hands among us who want Employment, as may be seen by the great Number of our People who go abroad yearly to seek for Work. To which we must add this farther Encouragement that the greatest part of foreign Commodities are subject to a Duty of ten *per Cent.* on Importation, besides about five *per Cent.* more for Freight, Commission and Insurance, which is a Charge that all Goods of our own Growth and Manufacture are entirely free from: Whoever has an Advantage over others of 15 *per Cent.* in the Sale of his Commodities, may easily undersel them and command the Market.

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We shall here take Notice of a late Improvement among us, which is a great Ease and Benefit to Inland Commerce, that by Means of our Turnpike Acts we have the finest Roads in *Europe*, and perfect Gravel-Walks from one Part of the Kingdom to another.

We have hitherto subsisted under vast Payments yearly to Foreigners for their Commodities, and to our Gentlemen who live abroad for the Rents of their Estates, and how we have been able to subsist so long, is Matter of great Surprize. It is a Proof that our Vitals are good and strong, but if all our People were fully employed, we should not only lessen the Importation of foreign Goods, but greatly encrease the Value of all we export, which would enable us to answer all Demands upon us from abroad, and lay up a Fund of Wealth at home.

The DUBLIN SOCIETY have made it their chief Business to raise and cultivate a Spirit of Industry among us, and will continue their best Endeavours to promote the same, by publishing Instructions on Husbandry and other useful Arts. P.

No. V. *Tuesday, February the 1st, 1736-7.*

UPON taking a second View of the Commodities imported into this Kingdom, the Society have thought some farther Remarks upon them might be useful.

If we had Mines of Gold and Silver of our own, and could raise sufficient Quantities of those valuable Metals, we might then safely indulge ourselves in the Consumption of foreign Commodities; a large Stock of Bullion would be of little Use to us, and lye as dead in our Coffers, as if it had still remained in the Mines, unless it were exported for all the Conveniences we want; we might then even gratify every innocent Vanity without Detriment to the Publick, and

and purchase a great deal of the Labour of other Countries with very little of our own. In that Case, however, the Community would neither be so happy, nor so powerful, as it would be, were all our People thoroughly employed; the Labour of a whole People is of much more Consequence and Value than the richest Mines of Gold or Silver, and where they abound, and a Nation depends upon them, the lower Rank are generally idle and beggarly.

Africa, Peru, and Spain are strong Instances of this, where amidst the greatest Treasures of this Kind, the common People are remarkably indigent and miserable; while *England and Holland*, though destitute of Mines, are able, by their Industry, to drain the Wealth of those very Countries, and maintain themselves in Plenty and Prosperity.

Were our People as theirs are, fully and usefully employed, our Labour would afford another Method of supporting ourselves under considerable Importations: The *English and Dutch* do not deny themselves any foreign Commodities of Use or of Convenience, but they pay the Price of them in their own Goods, and earn them by their own Hands; and could our People do the same, give their Crops and Manufactures for all they consume of foreign Growth, our Trade would be a saving one at least, and our Luxury abundantly less destructive: Or could we by a greater Industry send Commodities abroad, in Value superior to our Imports, we might perhaps support ourselves under all our present Difficulties, answer the Demands of Gentlemen abroad, and supply the Vanities of those that are at home. The Labour of other Countries would be paid back in Kind, and the greater Diligence of the Husbandman and Manufacturer keep the Balance on our Side, notwithstanding our Extravagance.

But neither of these Cases is ours, we have neither Mines of Gold nor Silver to exchange for foreign Commodities, nor are our People so fully employed,

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that we can purchase them by their Labour: we riot in foreign Luxuries, which we do not want, and are not able to pay for, and neglect what we do want, though it may every where be raised. Nature has given us a Soil abundantly capable of supplying us with all the Necessaries and Conveniencies of Life, and Hands sufficient to raise them, and yet we starve in the midst of Plenty, and are beholden to other Countries for our daily Bread.

Should a Foreigner see the great Flocks of Sheep and Herds of Cattle which cover our Land, and the Rich among us parading in foreign Silks, and living sumptuously, he must needs imagine that all the rest of our People are well fed and clothed; but he will soon be convinced of the contrary, when he finds such Numbers go naked and starving, and that Wooll, Beef, and Butter, which should be the Portion of the Poor, sent abroad to purchase Luxuries for the Rich.

It has been computed that twenty poor Families, who never taste Flesh Meat, might be comfortably supplied for a whole Year with as much Beef and Butter as has been exported to purchase a Head-dress for a Lady. If this be the Effect of Trade, we shall be undone by Trading.

It is the Opinion of some that foreign Trade, since the Time it has so much prevailed in this Part of the World, has increased the Number of Poor; and as our Trade is at present managed, this seems to carry a great deal of Reason with it; for when we had no Traffick with other Countries, and neither sent them our Commodities, nor took any from them, we lived upon the Produce of our own Soil and Labour, by which Means all the Necessaries of Life were cheap and in great Plenty, none could want since the Rich had no other Way of disposing of their Superfluities, but in Hospitality and Charity. But when we came to import great Quantities of foreign Goods, for the Consumption of the Rich, and to export a great Part
of

of our native Commodities, which were the Sustainance of the Poor, then all Provisions became dear and scarce, and the Work of the Poor was undervalued and slighted for the Sake of foreign Goods, which were more in Fashion.

It is great Folly in a poor Nation to imitate the Fashions of a rich One : the *French*, who supply infinite Matter for Luxury, may indulge themselves in the Consumption of it without any Detriment ; the Vanity of the Rich is gratified by the Labour of their Poor, and the Poor are maintained by the Pleasures of the Rich ; all are served in their own Way, and nothing lost to the Publick.

What may not be reckoned Extravagance in another Country, may certainly be so in ours. It is the highest Imprudence in us to consume such great Quantities of foreign Commodities, at a Time when we have a large Demand of another Kind upon us, and while such Numbers of our People are unemployed, it is our Interest, as much as possible, to limit our Consumptions to the Produce of our Soil and Labour, and to find Employment for all our idle Hands. When that is done, it may be allowable to indulge ourselves in some Extravagances from abroad, which, however, they may be of little Use to us, may do no Harm to the Publick. It is the Interest, and should be the Delight of every Gentleman in this Kingdom, to see that all his Tenants be fully and properly employed : where they are so, they are ever able to pay their Rents, either by the Produce of the Land, or their Manufactures.

The Article of Spinning, which is the Foundation of several Manufactures, would give Employment to a vast Number of Women, Boys and Girls, if duly encouraged ; and nothing can be set on Foot, or carried on with so much Ease ; the Price of a Wheel is but a Trifle to a Landlord, though it may be very considerable to a poor Woman, and when once it is set a going, it will soon pay the first Cost,
and

and maintain the Spinner after. It will be our Fault and Reproach if any are idle among us, since all may find Employment in the Linen Manufacture, and be sure of a Vent for all they can make.

Of what Use is that Gentleman to his Country, who never sees his Estate, and neither plants, builds, nor makes any Improvement himself, nor gives Encouragement to any other to do so upon his Lands; but spends the Income of his Estate either abroad for the Benefit of other People, or at home in foreign Superfluities; and consumes as much Money in a Year in Embroidery and Lace, as would set up many poor Families, and put them in a thriving Condition.

But where a Gentleman lives upon his Estate, and employs the People about him in improving his Lands, raising Plantations, building Houses, and promoting Husbandry and Manufactures among them, at the same Time that he advances his private Fortune, he has the Pleasure of supporting the Poor that are industrious, and serving the Publick by their Labour.

In how amiable a Light must such a one appear to his Country, who thus dispenses Blessings continually to all around him, and lives to Posterity in the Improvements and Ornaments of his own raising!

P.

N^o. VI. *Tuesday, Febr. 8th, 1736-7.*

THE SOCIETY's Instructions are chiefly intended for the labouring Part of the People: 'Tis not therefore their Design to engage deeply in general and political Observations. What has been done that Way in former Papers, or what more may be met with in this, is calculated only to remove, if possible, that unhappy Spirit of Negligence and Carelessness which has hitherto possessed us. 'Till that gives Place to a generous Concern for the Welfare of our Country; to an active and resolute Pursuit of its

real Interest ; 'tis in vain to give Instructions, which can only then be serviceable, when they are received with Pleasure and executed with Diligence. Before the Gentlemen of this SOCIETY can properly apply themselves to direct the Industry of the Nation, it is first necessary to excite it. They must make Men willing to be useful, and afterwards inform them how they may be most so.

In one of their former Papers something has been said of the natural Advantages of this Island, to encourage us to improve upon them by a regular and well-directed Employment of our Hands ; in the rest, the present Condition of our Trade has been laid before the Readers, to convince them of the absolute Necessity of a sudden Change of Measures ; in all of them the Comparison has been fairly stated, between what we now are, and what we might have been ; and this general Conclusion drawn, that unless we exert ourselves at last, the same Indolence among the Poor, and the same Luxury among the Rich, which have hitherto kept us low, must, in the natural Course of Things, finally undo us.

This Conclusion, as it stands in those Papers, upon plain and unanswerable Proofs, has the Weight of a thousand Arguments. If approaching Ruin cannot awaken us from our present Lethargy, our Case is desperate indeed : No Remedy can be depended on to correct our Errors, where the Prospect of immediate Misery has been of no Effect.

'Tis not therefore the Intention of this Paper to start new Matter, and multiply Arguments on a Subject that admits of no Dispute : One Point only, which appears of Weight to them, and was barely hinted to the Reader, the Gentlemen of this SOCIETY think it proper to resume. 'Tis of great Moment in itself, and contains Matter of Encouragement by affording reasonable Grounds to hope, that the Amendment of our Conduct will be immediately attended with that of our Condition.

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It has been observed by the SOCIETY in their late Remarks upon our Commerce, that the Commodities imported hither, a very few excepted, are in no Sense necessary to us ; while all those which we export, are strictly so to foreign Countries. This is a favourable Circumstance in Trade, and gives the Nation that enjoys it an unspeakable Advantage over its Neighbours. Our Beef, our Hides, our Tallow, and our Butter will always be wanted in the Southern Parts of *Europe*, for themselves, or for their Colonies ; and whatever Quantity of these we can afford, consistently with the Interest of the Nation, will therefore always find a Market. No Legislature ever will prevent the Importation of the immediate Requisites of Life. Prohibitions of that Kind are in themselves absurd, and would be little minded by the People, and 'till our Customers for these Commodities can have Pastures equal to our own, in a parched Soil, and under a scorching Sun, they must, at any Rate, be furnished from our Farms.

Our Wool is another valuable Commodity which will be always in demand. And so far is our Trade in this Particular from any Danger of Discouragement abroad, that it is the Interest of our next and richest Neighbour to invite the Importation of whatever we can spare.

This is meant of our Wool unmanufactur'd, and consider'd as the Produce of our Soil, which is then, as our Beef and other Articles already mentioned, of absolute Necessity to others, and a certain Export from this Kingdom. Let the Balance of Trade be never so much against them, all Countries must be supplied with these. They are not Things of Choice or of Conveniency, the Use of which may be prohibited or restrained, but properly, Things of Need, which must be had independently of any inferior Considerations of Gain or Loss by Trade.

Our Consumption, on the contrary, so far as it is supplied by Commodities of foreign Growth, is, to

call it by the softest Name, arbitrary only; introduced by Imitation, and supported by the Mode. The Legislature may at any Time confine it, and without any real Detriment to the Nation, or Hardship on the Subject, discourage or prohibit it.

This Difference is visibly considerable, and in one main Branch of Trade puts the Balance entirely in our Power. We may, whenever Prudence shall require it, lessen one Article of Importation in any Degree we please, without any Apprehension of diminishing our Exports; or in other Words, bring Bullion into the Kingdom instead of Brandies, Wines, and other Superfluities.

It may be the Business of some other Essay to consider how far this natural Advantage might be carried by proper Improvements in our Husbandry; and how many more of the Requisites of Life we might raise for Exportation by encouraging our Tillage.

At present it may be more useful to prevent a mistaken and pernicious Consequence, which some Readers might unwarily be led into from the foregoing Observations.

'Tis the darling Error of our Gentlemen to keep whole Counties under Stock; and it is not to be questioned, but the least Shadow of an Argument, to justify their Practice, would be readily and industriously improved upon. The Intention of this SOCIETY lyes indeed another Way; but without some timely Caution, what has been said of our natural Advantages, would, in all probability, be wrested to the Abuse of them. It is certainly, as it has been represented, a favourable Circumstance in Trade, to enjoy a Soil and Climate which afford the immediate Requisites of Life in great Plenty and Perfection; but it is the wildest Policy to depopulate whole Provinces, to enlarge our Exportation of them. When our own People are abundantly supplied, it is a Happiness to be assured of a ready Market for what then becomes a Superfluity; but to multiply our Stock to
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the Diminution of our People, is equally inconsistent with common Humanity, and with common Sense.

It is impossible that a Subject of so great Importance should not occur again in a fitter Place, where it may be treated of at full Length: What has now been said of it is intended only as a Caution against Mistakes, or at most, as an useful Hint which the Reader may easily improve upon. M.

No. VII. *Wednesday, February 15th, 1736-7.*

TH^{O'} the Authors of this Paper are desirous to proceed to particular Instructions, which at this Season of the Year might be of immediate Use, they cannot prevail upon themselves to neglect the first Essay of a Correspondent, who engages in their Design with Earnestness and Spirit, and seems so well acquainted with the real Interest of this Kingdom. It is to be hoped that his Example will encourage others to send the SOCIETY their *Observations*, which shall always be thankfully received, and communicated to the Publick in the Way that may make them most useful. The following Letter requires no Alteration.

GENTLEMEN,

‘ **Y**OUR last Paper address’d the Reader in a Method I always thought most likely to succeed.
 ‘ Encouragement will correct those, whom Censure
 ‘ will not provoke. As it is the softest Way of telling
 ‘ Men their Faults to point out the Advantages they
 ‘ have neglected, it is for that very Reason generally
 ‘ the most prevailing. Give me Leave therefore to
 ‘ pursue the Chain of Thought, you were at that
 ‘ Time engaged in, and to point out to my Country-
 ‘ men the Advantages they have in Trade, considered
 ‘ in another View, as it relates to *Manufactures*.

‘ In this Respect indeed every Nation is nearly upon a Level, and all Differences between them inconsiderable, which do not arise from Industry. The Value of every Manufacture, considered as such precisely, is a Price set upon Man’s Labour, which becomes by this Means a vendible Commodity, and capable of Exportation. Hence the Riches of a Nation, as far as Manufactures are concerned, are always in Proportion to its Diligence, a Reward inseparably annexed to Industry, and which no peculiar Advantage of Climate or Situation can procure.

‘ There are, however, even in this Respect favourable and inviting Circumstances. The Facility of Exportation, the Certainty of a Demand, and the Cheapness of Materials, give the Preference to some Manufactures over others, and consequently also the Advantage to those Countries which are most generally engaged in them.

‘ Of this Kind is the staple Manufacture of this Kingdom, attended with all Advantages, and free from all Discouragements.

‘ England, our great Mart for Linens, is so situated, that the Carriage of them over can scarce be called an Exportation. We run few Hazards, and are at small Expence to convey them to the Market, and have therefore no Draw-backs worth mentioning upon our Labour.

‘ The Demand on the other Hand is such as we could wish, Great and Constant; and, unless we labour to undo ourselves, certainly to be depended on for many Generations.

‘ The Consumption of that Kingdom, where every Labourer wears Linen and affords it to his Children from their earliest Infancy, cannot be easily conceived. At the lowest Computation, allowing ten Shillings only for the yearly Expence of each Inhabitant that Way, it amounts to four Millions *sterl.* The greater Part of this is every Year im-

ported, and will undoubtedly be so from hence, whenever we are able to supply them. It is the Interest of *Britain* to give us the Preference, and nothing but our own Imprudence can at any Time oblige them to turn this beneficial Branch of Trade into any other Channel.

The Woollen Manufacture is the genuine *English* Staple, and they are too prudent to change it without Necessity. It has been their constant Policy, and is that of all wise States, to place their chief Dependance upon one main Branch of Business; and whenever we shall do the same, and engage nationally in the Linens, we may depend upon all the Encouragement we can receive from them. Where there is no Rivalship, there can be no Grounds for Obstructions or Restraints, and as long as the proper Staple of each Kingdom is pursued in each, without encroaching on the other, both may be consistently encouraged. Hence we are secure of a Demand for all our Linens, and may, as we improve in the genuine Business of our People, depend upon a Market always equal to the highest Sale that we can make.

In the third Particular, the Cheapness of Materials, we have greatly the Advantage of any other Manufacture. The Improvements, which Flax may receive from Labour, are hardly to be limited. It is of all Materials the most pliant and obedient to the Artist, capable of being wrought to any Fineness and consequently raised to any Price. Its Value in the Field is trifling, and whatever more it may be sold for, when it comes from the Hackle, the Wheel, the Loom, or the Cushion, is all of it the Price of Labour. In the common Staple of this Country, the additional Value it receives from the many Hands it goes through before it comes out of the Loom, is full six Parts in seven of the total Price. In other Branches of the Linen Manufacture, the Proportion rises to a Degree, which

' can hardly be conceived ; certainly no less than of
 ' one Hundred, perhaps, upon an exact Computa-
 ' tion of many Hundreds to one. A Stone of Flax,
 ' the original Price of which, before it has undergone
 ' any Change from Labour, is only Two and Six-
 ' pence, may be drawn into Threads of different
 ' Finenesses gradually encreasing in Value from one
 ' Penny to four Pounds an Ounce. Of each of these
 ' it will afford some Ounces, two at least of the finest
 ' Staple, and of every other more, in Proportion to
 ' its Coarseness, till at last the Flax will yield no
 ' longer, Now, upon a moderate Computation, the
 ' Value of these several Ounces of Thread cannot be
 ' less upon the Whole, than ten or twelve Pounds,
 ' and consequently the Proportion, between the first
 ' Cost of the unmanufactured Flax and the Sale of it
 ' in Thread, is as that of 1 to 80.

' Were it proper to attend the Thread in its farther
 ' Progress, through the several Changes it may un-
 ' dergo on the Cushion, or in the Loom, the Pro-
 ' portion would be found to rise a great deal higher,
 ' and the prime Cost of the Material be absorbed and
 ' lost, and of no Account in the Sum Total. But as
 ' a Calculation of this Kind would be of little Use, I
 ' shall at present wave it, and only conclude in gene-
 ' ral, that the Linen Manufacture has plainly the
 ' Advantage of all others, in the Cheapness of Mate-
 ' rials, and is for that Reason, as well as those already
 ' mentioned, a most valuable Staple.

' I must leave it to you, Gentlemen, to press the
 ' Consequences of these plain Facts upon your Rea-
 ' ders. You are best Judges, how far it is the In-
 ' terest of this Nation, that our Manufacturers apply
 ' themselves to the finer Kinds of Linen Goods : In
 ' my private Opinion we are not ripe for them. But,
 ' however that be, it is certainly a great Advantage
 ' to deal in a Commodity, which, as our Numbers
 ' and our Skill encrease, is capable of unlimited Im-
 ' provements. I shall add, that even in coarser Kinds,
 ' suffi-

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' sufficient Encouragement ariseth from the Considera-
 ' tions I have presumed to send you, to engage every
 ' Lover of his Country to promote the Linen Trade
 ' among us to the utmost of his Power. If my Mite
 ' can be of Service, I am more than paid for the
 ' Trouble of laying these Hints together. I had no
 ' other End in doing so, than to put my Countrymen
 ' upon useful Thoughts, and to assure you, Gentle-
 ' men, of my best Wishes, for the Success of your
 ' generous Intentions.

I am, &c.

We should be guilty of Ingratitude did we dismiss
 the Reader without mentioning an additional Advan-
 tage in our Staple, which we owe to the Favour of
Great Britain, and has unwarily been overlooked by
 our ingenious Correspondent. *Irish* Linens are im-
 ported into *England* Duty free, while those of other
 Countries are loaded with a considerable Impost. We
 can therefore undersel them, though we did not un-
 derwork them, and without distressing the Manufac-
 turer at home keep the Market entirely in our Hands.

To conclude, and to draw a general Inference from
 this and the last Paper. The favourable Circumstances
 of our Trade from the natural Produce of our Soil,
 and the Advantage of a staple Manufacture, for which
 we have a ready Market, and a great Demand, in-
 vite us at the easy Rate of a little Pains and Industry
 to be a rich, flourishing, and prosperous Nation. Our
 other Choice is Indolence and Misery, and between
 these two there is no Medium. One Part of the Al-
 ternative we must necessarily make our Option; we
 may be *Rich* whenever we are diligent, and till we
 resolve to be so, we must be contented to be *Poor*.

M.

N^o. VIII. *Tuesday, February 22d, 1736-7.*

THE DUBLIN SOCIETY have thought it ne-
 cessary to make their first Addresses to Gentle-
 men,

men, who have the Interest and Welfare of their Country at Heart, and to lay before them the unhappy Condition under which it labours, in order to raise and cultivate a Spirit of Industry and Improvement, as the most probable Way to render us a flourishing People. General Observations have only a Tendency to rouse us from our Supineness and Indolence, but will never alone recover us from our sinking State, without particular Instructions how and where to amend what has been amiss. We flatter ourselves, that many amongst us would immediately apply to various Kinds of Improvement, were they but instructed how to conduct them in the best Manner, and with the least Expence. For this Reason we shall immediately proceed to the Consideration of particular Branches of Husbandry and other useful Arts. And as the Linen Manufacture is of the utmost Importance to this Kingdom, we are much obliged to a Gentleman of this SOCIETY, who has furnished us with his Observations upon that useful Subject.

This Kingdom, no doubt, is much indebted to some other Gentlemen, who have been at considerable Pains in collecting Instructions upon this Head. But their generous Designs have been less successful than could be wished, by their receiving wrong Informations from Persons, who were either incapable of making proper Enquiries, when sent abroad at the publick Charge, or, perhaps had Cunning enough to conceal their acquired Knowledge, in order to serve their private Interest at the publick Expence. And hence it is, that the Observations, we are about to communicate, differ so widely from any before published upon this Subject. The one depended upon the Information of Tradesmen, foreign Merchants, and others, who all had Ends of their own to serve. These are the Result of a proper Inquiry made upon the Spot, by a disinterested Person. We mention these Circumstances only, that the following Instructions may have their full Weight and proper Influence. They are all deduced from

from Facts, which the Author of these Letters carefully examined, and whereof he was a frequent Eye-witness during his Residence in *Holland and Flanders*, and his Station in Life, and Relation to this Country, set him above being influenced by little private Views. We can therefore recommend his Essays with an entire Confidence, and promise considerable Success to those who will be directed by them.

GENTLEMEN,

I Heartily approve of the Design you have engaged in, and as every Lover of his Country ought to contribute all in his Power to promote it, I shall, with the greatest Alacrity, in this and some subsequent Letters, communicate to you some Observations on several Branches of the Linen Manufacture, which I apprehend may be of Use to this Kingdom.

The Choice of proper Soil is of very great Importance in the raising of Flax and Flax-seed, and hitherto not sufficiently understood in *Ireland*. The Gentlemen, who drew up the Instructions heretofore published, recommended dry Sheep-walks and a light Soil; this I conceive is a Mistake, and shall therefore endeavour to correct it.

It is true, that a gravelly, sandy, or light Soil, produces fine Flax, but then, it is in a small Quantity, and the Seed degenerates the first or second Year at farthest; whilst a deep, stiff, moist clayey Soil, under proper Tillage, produces the best Flax Seed, and a much larger Quantity of Flax. I am the forwarder to assert this, since I know that the *Dutch*, whose great Success in the Linen Trade is a strong Proof of their superior Knowledge, scarce sow any Flax-Seed in the Province of *Holland*, because it is a light sandy Soil; but raise as good Flax-Seed and Flax as any in *Europe*, in the deep, wet, heavy, stiff, clayey Grounds in the Province of *Zealand*. This is so true, that the Flax-Seed raised there always yields a higher Price, and

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is constantly preferred to any Seed imported from the *Baltick*. The *Dutch* do indeed import Flax-Seed from *Riga*, but not, as is generally said, because their own degenerates. They import it as Merchants only, and purely to supply the Necessities of other sandy Countries, as Part of *Germany*, and most of the *Seventeen Provinces*. But had they a sufficient Quantity of clayey Soil, as that in *Zealand*, for raising Seed answerable to this great Demand, they would never import a Grain.

By this I would not be thought entirely to discredit the Use of other Soils. Clay is certainly the best; and all Grounds good in Proportion to the Quantity of this Ingredient in their Composition. However, lighter Soils, particularly Loams, may be sown with Flax-Seed with Advantage. The Flax, as has been observed already, is the finer, and we may sometimes have Occasion for the finest; and besides, by varying our Soils, we may be able so to change our Seed, as always to be provided with the best from our own Lands.

I have been more particular upon this Head, than at first View might appear necessary, because it has been much insisted on, that *Ireland* must always depend upon foreign Markets for Flax-Seed, which is the very Foundation of our staple Manufacture. I should be very sorry this was the State of our Case. But it is so far otherwise, that I am persuaded, every Gentleman who seriously attends to the Facts above related, and considers the great Variety of Soils, and every one of them good in their Kind, particularly, the large Veins of rich Loam, and great Tracts of deep heavy Ground to be found in different Parts of this Kingdom; I say, every Gentleman who considers this will surely agree with me, that did we make the Attempt in good Earnest, it is scarcely possible we should fail of Success. Nay, I make no Doubt, but that, in a short Time, we should be able to raise abundantly more than would supply
our

‘ ourselves; and have it in our Power to furnish Eng-
 ‘ land and other Countries with great Part of what
 ‘ they annually import, to serve their Oil-Mills and
 ‘ other Purposes. *I am, &c.*

R. W. M.

Nº. IX. *Tuesday, March 1st, 1736-7.*

WE shall make no Apology for publishing this second Letter on Flax Husbandry, without any Introduction, but barely acquaint the Reader, that it comes from the same Hand which obliged us with the last.

GENTLEMEN,

‘ **I** Have already given you a short Account of the
 ‘ Soils I would recommend for the Culture of Flax
 ‘ and Flax-Seed, and shall now proceed to inform
 ‘ you of the Manner, in which, I judge, the Ground
 ‘ ought to be dressed and tilled, previous to its being
 ‘ sown. And, in order to this, I shall beg Leave to
 ‘ point out to you the Method that is practised in *Zea-*
 ‘ *land* and *Flanders*, and to intersperse some Remarks
 ‘ upon it, which may be of Service to ourselves.

‘ I have not many Things to observe in Relation
 ‘ to Manures. The *Dutch* use Dung and Ashes, and
 ‘ sometimes human Ordure in smaller Plots of Ground
 ‘ well fallowed. We have, besides the former, Marle,
 ‘ Lime, Mooring, and Wreck, with several others,
 ‘ which are all, in different Soils, very good for Flax,
 ‘ and some of them, perhaps, more valuable than
 ‘ Dung: Dung, if not sufficiently old and rotten, is
 ‘ apt to throw up Weeds in great Quantity, and
 ‘ thereby not only increases the Expence of weeding,
 ‘ but besides, injures the Flax: Whilst Marle, Lime,
 ‘ and Sea-Wreck are free from this Inconveniency,
 ‘ and preferable upon that Account. This Particular
 ‘ is of great Moment, and should always be attended
 ‘ to by the Husbandman, in the Choice of his Ma-
 ‘ nures:

‘ nures. Weeds are destructive to all Crops, but are
 ‘ so especially to Flax, which suffers greatly from
 ‘ them, both in its Goodness and its Quantity.

‘ In the Tillage of the Ground I shall be more
 ‘ minute, because I am afraid there lye some Preju-
 ‘ dices against the Method I design to recommend,
 ‘ which nothing can so effectually remove, as an ex-
 ‘ act account of the *Dutch* and *Flemish* Husbandry in
 ‘ this particular.

‘ In *Zealand*, where the Lands are such as I think
 ‘ best for Flax, deep, stiff, wet and clayey, they take
 ‘ two different Methods to bring them into proper
 ‘ Order. They either give Ley Grounds three, four,
 ‘ or more ploughings with a Summer fallowing; or,
 ‘ prepare them for the Flax by preceding Crops in
 ‘ the following Manner. After proper dunging, and
 ‘ two or more ploughings, they take a Crop of Corn
 ‘ off their Lands; the next Year they plant them
 ‘ with Madder, which remains two Years in the
 ‘ Ground; and the fourth Year they sow Flax in it.
 ‘ By these Means the Ground is well broke. For,
 ‘ besides the two Ploughings for the Corn-crop, and
 ‘ the natural Fermentation of the Dung, with several
 ‘ additional Ploughings, sometimes five bestowed up-
 ‘ on the Madder, together with many more to earth
 ‘ it up as it grows; there is after these the digging
 ‘ of the Ground to take it up; all which reduce the
 ‘ Soil to such a Degree of Fineness, as I believe is
 ‘ seldom equalld in this Country.

‘ Our Farmers will be apt to imagine, that Land
 ‘ prepar’d in this Manner would answer any Purposes
 ‘ of Husbandry. Nevertheless, the *Zealanders* them-
 ‘ selves prefer the former Methods of fallowing and
 ‘ frequent ploughing as the best, to raise a valuable
 ‘ Crop of Flax. The clinging together of the Clay,
 ‘ in the two Years that the Madder stands upon it,
 ‘ and the Quantity of Nourishment drawn off by
 ‘ that Plant, leave even those rich and well till’d
 ‘ Lands poorer than they would choose to have them
 ‘ for

for their Flax. 'Tis only from the great Benefit
 they receive by planting Madder, that they are led
 into the latter Practice, which, upon the whole,
 turns to a good Account; though, as far as the
 Flax alone is concerned, 'tis not equal to the former.
 To confirm what I have now advanced 'tis ob-
 servable, that in those Parts of *Flanders*, where they
 have Veins of Clay, as particularly about *Courtray*,
 they sow their Flax upon Ley Grounds immedi-
 ately after a Summer and Winter Fallow: As they
 do not deal in Madder, Flax is their first Crop,
 and they prepare the Soil for it, by many succes-
 sive Ploughings. Even in the driest and lightest
 Soils, which are capable of bearing Flax, as are
 those about *Meeblin*, *Antwerp*, *Ghent* and *Bruges*,
 and, indeed most Parts of *Flanders*, they think three
 Ploughings necessary, and never sow their Flax
 without so many at the least, and a Summer-Fallowing.
 We are told, that in *Ireland* good Crops of Flax
 have been had from one Ploughing on Ley
 Grounds. For my own Part, I much doubt, if
 ever we have had what would be esteemed a good
 Acre of Flax in *Zealand* or *Flanders*. I declare I
 never could see one; and I take the Reason to pro-
 ceed from our Ignorance in the Choice of proper
 Soil, and Negligence in giving it the proper Til-
 lage. Indeed, were I to give my Opinion freely,
 I think we have hitherto been greatly defective in
 almost all the Branches of Husbandry; particu-
 larly, we have tilled our Lands but superficially be-
 fore they have been sown. Our Grounds designed
 for Wheat have not been labour'd as those in neigh-
 bouring Countries generally are, and our Crops
 have been proportionably small. Nevertheless, even
 upon them, there has been more Expence and Pains
 bestowed than have been allowed the Ground laid
 out for Flax. Surely, it is Time to rouse ourselves
 from this inactive State! Shall we, who almost de-
 pend entirely on the Linen Manufacture, indulge
 our

' our Sloth and Indolence at so dear a Rate, and ne-
 ' glect the Tilling of our Lands in a proper, though
 ' somewhat more laborious Manner, when not only
 ' the publick Welfare would be promoted by it, but
 ' the private Advantage and Profit arising from Flax
 ' and Flax-Seed would so vastly exceed what may
 ' be expected from any other Harvest? No Farmer
 ' would sow Wheat in the careless Manner in which
 ' we have hitherto sown Flax, and expect a tolerable
 ' Crop; and certainly Flax will bear the Expence of
 ' many Ploughings and Fallowing much better than
 ' either Wheat or Barley.'

I am, &c.

R. W. M.

N^o. X. *Tuesday, March 8th, 1736-7.*

WE think ourselves under particular Obligations to the Gentlemen, who have favoured us with their ingenious and useful Remarks upon several Parts of Husbandry. We hope they will forgive us, that we have not, as yet, taken any publick Notice of their Letters; and are satisfied, they will agree with us, that nothing ought to interrupt the Attention of the Publick on a Subject of so great Importance to this Country, as that which we are now engaged in: We shall therefore proceed to present our Readers with a third Letter on the Linen Manufacture.

GENTLEMEN,

' **W**HEN the Land is brought into proper
 ' Order, by the Tillage described in my last
 ' Letter, the Husbandman's next Care must be, to
 ' fit it for the Seed. This is done in *Zealand*, by
 ' laying it out in broad, flat Ridges, divided by small
 ' Trenches. The Ridges are generally fifty, sixty,
 ' nay sometimes seventy Feet broad, and the Trenches

' two or three Feet deep, and a Foot and an half
 ' wide. By these Means, the Lands are kept in a
 ' proper Degree of Moisture; the broad, flat Ridges,
 ' retain enough to preserve them from growing dry,
 ' and the Trenches carry off whatever is superfluous.
 ' This Practice I beg leave earnestly to recom-
 ' mend; and, by the time our Husbandmen have
 ' try'd it, I am bold to say, they will not find that
 ' Danger in wet Clays, which they apprehend from
 ' them. The Trenches will carry off all that Water,
 ' which might scald, or otherwise prejudice the Flax,
 ' and when that is done, the remaining Moisture,
 ' which in high round Ridges is too soon exhausted,
 ' is of absolute Necessity to secure a valuable Crop.
 ' The *Flemish* Farmers are so thoroughly convinced
 ' of this, that in their light and drier Soils, they
 ' make no Trenches, but commonly lay down whole
 ' Fields, as flat and even as a Bowling-Green; and
 ' this in order to retain all the Moisture they can get,
 ' and thereby protect their Crop from the Driness
 ' and Heat of Summer. I have now finish'd what
 ' I think necessary to be said concerning the Choice
 ' of Soils, and the Manner of preparing them for
 ' Flax. Upon the Whole, there is no room to doubt,
 ' that were the Method I have pointed at diligently
 ' pursued, the succeeding Profit and Advantage
 ' would abundantly reward all the additional Labour
 ' and Expende of the Farmer in this Article.

' I proceed at present to give you my Thoughts
 ' upon the Nature and Properties of good Flax-Seed,
 ' and the Time and Manner of sowing it. Nothing
 ' is plainer, than that the Farmer cannot be too nice
 ' in the Choice of his Seed, since the Value of his
 ' Crop must chiefly depend upon its Goodness. In
 ' general, the shortest, plumpest, thickest, oiliest,
 ' heaviest Seed, of a bright brown Colour, is esteem-
 ' ed the best. The *Dutch Boor* is very exact, in ex-
 ' amining these several Qualities, and makes his Trials
 ' in the following Manner. In order to discover its

D

' Thick-

Thickness, he takes a large Handful, and squeezes it, until the Edges appear plainly between his Finger and Thumb; for it is entirely from the Edge he forms his Judgment in that particular. To try its Weight, he throws a Handful into a Glass of Water; if it sinks soon, he is sure it is heavy and good; if otherwise, he judges it unfit for his Purpose. To examine its oiliness, he throws a Quantity into the Fire; if it blaze soon, and crackle much, he thinks he may depend upon it. After all, he sometimes sows it in a Hot-bed, and in short leaves no Method untry'd, which will ensure him that his Seed is of the best Kind.

I have only mentioned these minute Circumstances, to shew how curious we ought to be in the Choice of our Seed.

What I have now to add is an Advice of great Importance to all Husbandmen, and particularly so to the Flax Farmer; namely, not to depend on a Succession of good Seed from the same Soil. The best Clays will not preserve the Seed from degenerating by Degrees, if it be sown for any considerable time on the same Kind of Soil, from which it has been sav'd. It loseth every where something of its Goodness by that Management; and though less in Clays, than in any other Ground, yet even in those it will finally decay. For that Reason it is necessary in all Soils to change the Seed, and the more frequently it is done, the better. The common Rule in this Case is to buy from lighter Grounds to sow on Clays, and to buy from clayey Soils to sow on lighter Grounds; and the Rule well understood is undoubtedly a good one. But as I am perfectly convinced that light Grounds do not afford good Seed, I must beg leave to explain the Rule at large, and prevent all Mistakes about it. Where the Farmer intends to raise a good Crop of Flax-Seed, he must avoid light, dry, and sandy Grounds. They are never to be used with any other Purpose, than

' than to procure fine Flax, and always disappoint
 ' the Farmer when he hopes for good Seed from
 ' them. 'Tis not therefore those light Lands that
 ' can be depended on for change. The Farmer, who
 ' expects good Seed, must confine himself to Clays
 ' of different sorts, which will afford sufficient room
 ' for change. The Seed raised in the stiffer Kind
 ' will be best sown on the looser, and the mellow,er,
 ' which come nearest to a Loam; and the Produce of
 ' those again will serve for proper Seed on the stiff-
 ' est and the deepest. The smallest Variation in the
 ' Nature of the Soil is sufficient to preserve the Seed;
 ' and no Body need be inform'd, that Clays differ
 ' much from one another. In *Ireland* we have them
 ' almost of all Kinds; and therefore can be under no
 ' Temptation to have recourse to lighter Soils, which
 ' never improve the Seed; but on the contrary,
 ' constantly impair it. I have been the more parti-
 ' cular on this Point, because the common Prejudices
 ' entertained in this Country against Clays appear to
 ' me of very pernicious Consequence. They so mate-
 ' rially affect our Linen Trade, that no Pains can
 ' be bestow'd to more Advantage, than those which
 ' are directed to remove them. I shall therefore add, to
 ' what I have hitherto observed from the Practice of
 ' other Countries, a remarkable Instance of the Use-
 ' fulness of clayey Soils in this Kingdom. 'Tis
 ' known that the *Concus* Lands in the County of *Li-*
 ' *merick* are deep strong Clays. An Experiment was
 ' made some time ago to determine what Effect they
 ' would have upon decay'd Seed. In order to this
 ' a Barrel of the most degenerate Flax-Seed that could
 ' be got in the North was carried to *Munster*, and
 ' sown in those Lands. There it recovered and pro-
 ' duced very good Flax; the Seed return'd by those
 ' rich stiff Clays was as good as could be us'd,
 ' and improv'd beyond all Expectation; insomuch,
 ' that the Seed sent back to the North, and again
 ' sown there, afforded as good Flax and Flax-Seed

as any from abroad. * The Fact is notorious, and was communicated to the Publick by another Hand, and the Consequence, methinks, as obvious, that the deep Clay Soils are the best for Flax-Seed.

I shall conclude this Letter, by observing, That since the Choice of Seed is a Point of the highest Moment, 'tis a manifest Absurdity to depend upon foreign Markets. 'Tis not to be expected that the Dutch, or any other Nation, will deprive themselves of their best Seed; we must be satisfied with the Refuse of their Flax-crops, 'till we take care to raise better of our Own. Add to this, That since all Seed is not equally fitted to all Soils, we are under an absolute Necessity of raising Seed among Our-selves. For the Countryman, who gets his Seed from foreign Countries, can never be assured of the particular Kind of Soil, where it was raised, and of consequence runs a considerable Risque of being disappointed in his Crop. Whereas, did we heartily engage in sowing Flax-Seed, in the several Parts of Ireland, which are proper for it, the Farmer might depend upon his Seed, adapt it to his Soil, and with a little Care secure a certain Crop.

I am, &c.

R. W. M.

* This Experiment proves that we may have good Seed, of our own; as a Confirmation of it, 'twill be proper to inform the Reader, That the Gentlemen of the Society sow'd equal Quantities of four different Kinds of Seed, the best that they could get of each, in the same Land and with the same Culture; *Plantation* Seed, *Riga*, *Dutch*, and *Irish* Seed; and that the Crop produced by that of our own growth was considerably preferable to the rest.

N^o. XI. Tuesday, March 15th, 1736 7.

THE following Letter comes from the same Hand with those already published on the Culture of Flax, and requires no Introduction.

G F W

GENTLEMEN,

THE next Article to be considered by the Flax-Farmer, is the Quantity of Seed which he ought to sow. And here it will be proper to observe, that there will be always a remarkable Difference in the Produce, in Proportion to the different Quantities which are sown. For, should a smaller Parcel of good Seed be made use of, it will yield a plentiful Crop of good Seed and strong Flax: But should the Farmer sow a larger Quantity of the same Goodness, his Flax would indeed be finer, and the Increase great, but then his Seed would be much less valuable. The *Dutch*, who are not at all apprehensive of wanting Seed, generally practise the latter Method. But as their Case differs widely from ours, their Manufacture being arrived to Maturity, ours in its Infant State, what may be wise in them, may be imprudent in us. Were I therefore to advise, I should choose to recommend the former Method, until we had brought our Seed to an equal Degree of Perfection and Plenty. Upon the Whole, a great deal must be referred to the Discretion of the Farmer, and an Allowance made for the Difference of Soils equally well laboured; for a good Soil will cherish a large Quantity of Seed, and afford it all that Nutriment which is necessary to bring both Seed and Flax to Perfection, whilst a like Portion of Seed would dwindle and starve in a hungry Soil, and at last return a miserable Crop. As to the particular Quantity of Seed, necessary for a determinate Portion of Land, I shall only observe, that from three to four Bushels* will generally suffice for an *Irish* Acre,

* The Gentlemen of the Society sow'd different Quantities of Seed in the same Land, from two Quarts to half a Pint per Perch, and they found that the Quantity which afforded the best Crop answered very nearly to four Bushels; the Experiment shall be repeated more exactly the next Season, and the result communicated to the Publick.

‘ which, by the best Computation I could make, answers pretty near to the Practice in *Holland* and *Flanders*.

‘ Every Flax-Farmer, I believe, is sufficiently apprized, that good Weather and a warm Season are very necessary for saving Flax-Seed, and watering and grafting Flax. And yet we do not seem to have sufficiently attended to this particular in *Ireland*, otherwise we should not, as is generally done, defer the sowing of Flax-Seed until the Spring is so very far advanced. In order to rectify this Error, it would be advisable to sow the Seed the first good Season in *March*, for then in all probability it will be ripe the latter End of *June*, or Beginning of *July*; and the Farmer by these Means, will have time enough before him, for the Purposes above-mentioned. If this Method is pursued, another considerable Advantage will be gained, a good Crop of Turnips may be had upon those Flax-Grounds that very Season, which would otherwise continue waste and useless the Remainder of the Year.

‘ Since I am engaged in giving Directions for sowing of Flax, I hope I shall be forgiven a short Digression, which may be very useful to the Farmer; when he designs to lay down his Lands, he may safely sow Clover or other Grass-Seeds, a few Days after his Flax-Seed. The Clover is so far from prejudicing Flax, that it is observed to be of remarkable Service to it. It is probable, that it preserves the Dew and Rain about its Roots, and shelters the Ground around them from the Heat of the Sun; but be that the Cause or not, long Experience has demonstrated, that they thrive perfectly well together, the Clover producing a good Crop of Grass soon after the Flax is pull’d. This Method is constantly practis’d in *Holland* and *Flanders* with good Success, and therefore I can recommend the Use of it amongst our selves.

‘ I have

' I have very little to observe about the Manner of
 ' sowing Flax Seed, I shall just take notice, that the
 ' Seeds-Man must go up the Ridge in a straight
 ' Line, and sow with his Right Hand, and then re-
 ' turn in the same Path, and sow with his Left Hand;
 ' for it is of Moment that he should sow evenly. Some
 ' Days after this, if he intends to lay down his
 ' Grounds, he must sow his Grass-Seeds, and cover
 ' them by Bush-harrowing and Rolling; the Man-
 ' ner of doing which is so well known already, that
 ' I need not enlarge upon it. For the same Reason
 ' I need say little upon weeding the Flax: It must
 ' be done at the Time when it is between two and
 ' five Inches high. The treading upon it with the
 ' Heels of Shoes will prejudice the Flax, but sitting
 ' upon it will do it no harm.

' I now come to the Consideration of an Article of
 ' the greatest Consequence to the Linen Manufacture,
 ' namely, the proper Season of pulling the Flax. And
 ' here, Gentlemen, you must bear with me if I en-
 ' large with some Warmth upon this Subject. I have
 ' Prejudices to encounter as pernicious as they unhap-
 ' pily are common, and which have so visible a Ten-
 ' dency to defeat all rational Attempts to establish
 ' the Linen Manufacture, and make us a flourishing
 ' People, that it is not possible to speak of them with-
 ' out Indignation. He does not love his Country
 ' who can without more than ordinary Concern see a
 ' destructive Practice obstinately adher'd to, and in-
 ' dustriously supported against the plainest Evidence,
 ' and the concurring Testimony of Reason and Ex-
 ' perience. If Warmth is at any Time becoming,
 ' 'tis certainly where there is a publick and a consi-
 ' derable Interest at Stake; and I will be bold to
 ' say, that few Things can equally prejudice this King-
 ' dom as the perverse mischievous Custom of pulling
 ' our Flax too green. 'Tis unaccountable Infatuation
 ' in our Farmers, purposedly, and with their Eyes
 ' open, to throw away a valuable Portion of their
 ' Crop,

' Crop, and after repeated Warnings in the single
 ' Article of Seed, industriously deprive themselves of
 ' a return of eight or ten Pounds Sterk from every
 ' Acre, as they sow. Nothing but the Prevalency
 ' of it could make us overlook so glaring an Absur-
 ' dity; and were he not countenanced by Numbers,
 ' a Man that flings away his own, and buys foreign
 ' Seed at a dear Rate, would be hooted thro' the
 ' Country. 'Tis common, and therefore only 'tis
 ' not wonder'd at, but for that very Reason it be-
 ' comes more mischievous, and a Matter of general
 ' Concern. I shall not presume to direct the Legis-
 ' lature; but I cannot conceal my Wishes and my
 ' Hopes, that they may, at a proper Time, think
 ' this pernicious Practice well deserves their Notice.
 ' Where Argument and Persuasion have been tried
 ' without Success, Laws and Penalties must be call'd
 ' in to secure the publick Good, and I believe, a
 ' Clause to prohibit the pulling of green Flax would
 ' as effectually advance the Interest of this Kingdom,
 ' as any Law that has yet been made relating to the
 ' Linen Manufacture.

' In the mean Time, as I would willingly per-
 ' suade myself that All among us are not resolved
 ' against Conviction, I shall desire those, who are
 ' willing to hear Reason, to reflect with Seriousness
 ' on the unhappy Circumstances we lye under from
 ' the Perverseness of our Farmers. We are depen-
 ' dent not only upon Foreign Markets, but upon the
 ' Winds and Waves for the fundamental Part, the
 ' very *Primum* of our Manufacture. Every Year
 ' the Trade, and consequently the Support of the
 ' whole Nation, is, in one main Branch of it, expos-
 ' ed to all the Hazards of the Sea; we lye at the
 ' Mercy of it in a Point of infinite Importance, and
 ' whether our Flax-Dressers, our Spinners, our Wea-
 ' vers, and our Bleachers shall be useful to their
 ' Country by their Labour, or become a Burthen to
 ' it, and beg their Bread about the Streets, depends

in a great Measure Upon that treacherous Element.
 This very Season *Ireland* has lost above five thousand Barrels of Flax Seed upon that fearful Chance which every Year must run till we grow wiser, and learn to provide ourselves with a certain and independent Supply of good Seed from our own Lands.

This Consideration alone is of Weight sufficient, one would think, to bring about a Reformation among those who are capable of Reflection; were it true that the Flax is in some Degree impaired by standing till the Seed is ripe, it would be, notwithstanding, a wild and inconsistent Conduct, to run the Hazard of the whole, to avoid a single Inconvenience in our Staple. But the Case in Fact is otherwise — The Flax becomes more valuable, both from its Quantity and Quality by being allowed to ripen. Upon a moderate Computation, the Farmer, who pulls green, loseth besides his Seed, more than half of his Flax-Crop; his weak green Flax breaks under the Dressing, runs to Tow, and disappoints him of his Quantity: And what is still of more Importance, the little that he has is every Way inferior to what it would have been had he suffered it to stand till it were ripe. In Point of Strength, no Man can be so blind, as to question the Truth of this Assertion. Maturity is full as requisite to make the Fibres strong in Plants, as it is in Animals; and it were as good Philosophy, to expect Vigour and Robustness from the Gristles of a Child, as to hope for Strength and Toughness in the Fibres of green Flax. In Respect to Fineness, I know our Manufacturers will be against me, and give the Preference to unripe Flax, because it splits with little Labour; but, if we may depend upon the Practice of the *Flemings*, they are undoubtedly mistaken. 'Tis the peculiar Care of those experienced Manufacturers, to let that stand longest, which they intend for the finest Goods; they even venture the shedding of the Seed,

Seed, to have it as ripe as possible, when it is to be wrought up into the better Kinds of their Cambricks, and their Laces: And surely repeated Trials would by this Time have convinced them of their Error, if ripe Flax were as coarse and stubborn as we think it. I have not room to enlarge upon this Head at present, and therefore shall beg Leave hereafter to resume the Argument, and to shew at large, that the ripest Flax, as it is always the strongest, becomes also, by proper Dressings, both the finest and the softest.

I am, &c.

R. W. M.

N^o. XII. Tuesday, March 22, 1736-7.

THE following Letter from the same Hand, with several already published, gives the SOCIETY an Opportunity of shewing their Concern for the right Information of the Reader, in a Way which puts it out of Question. It seems that some Facts, which we unwarily had built upon in our Directions to the Flax-Farmer, are now contradicted by this ingenious Correspondent. He denies that the *Dutch* and *Flemings* stack their Flax unripped, and condemns that Practice from the same Principle by which we had been led to recommend it, the Example of those experienced Artifts. This lays us under a Necessity of owning we have been mistaken; a hard Task to Men who write from any other Motive than the Desire of being useful; but highly acceptable to us, who have no other View than to spread beneficial Knowledge, and prevent the ill Effects of all Errors universally, whether they be our own or those of other People.

We have already given the Reader an Account of the Reasons which prevail with us to rely with the utmost Confidence on this Gentleman's Information, and

and therefore No-body can be surprized that we should so readily give up a Fact which he contradicts from his own Knowledge. 'Tis not common to meet with a curious Observer upon the Customs of other Nations, who had no other Motive to encourage his Enquiries than the Advantage of his native Country; this Circumstance gives an uncommon Weight to his Assertions, and makes his single Testimony equivalent to that of Thousands, who may be suspected of private and self-interested Views.

From the Impossibility of procuring better, we have sometimes been obliged to proceed upon the latter Kind of Information; but we do assure the Reader, that if, in any other Case, it should appear hereafter that we have been misled, we shall readily act the same honest Part again, and deceive him only while we are deceived ourselves.

GENTLEMEN,

'TIS of so much Importance to this Kingdom, that our Flax should not be pulled too soon, that I could wish to add more particular Directions to what has been already said upon this Subject; but it is so nice a Thing to describe Colours, upon which the Farmer's Judgment must depend in a great Measure, that I am afraid, I must leave him mostly to his own Experience, the best Instructor in these Cases. In general, when the Field appears of a bright Yellow inclining a little to the Lemon Colour, 'tis Time to try the Seed of a few Stalks, which, when arrived to its Maturity, will be found firm and full like that of other Plants, and of a light brown Colour. The *Dutch* wait till the Boles or Pods are ready to crack, and, in some of the ripest Stalks begin to open. Upon the Whole, the best Direction I can give is to let your Flax stand as long as is consistent with the Safety of your Seed; for, if that be once secured from shedding, your Seed and Flax will be the better.

‘ In the Article of making Flax in the Field, the Practice of *Ireland* differs so little from what is customary in *Holland* and *Flanders*, that I need not take up much Time in giving Directions upon that Head. I would fain hope that for the future, few will be so much their own Enemies as to pull their Flax before it is fully ripe; and when it is so, I have already described. The Farmer’s next Business is to make it, which is done by taking as much as he can easily grasp with both his Hands, and gently laying it on the Ground with the Heads pointing southward, he then takes another Handful and lays it upon the former, not directly across but somewhat slanting, in order to keep the Heads of the Flax still exposed to the South, and this he repeats untill he raises the Heap a Foot and a Half high. By this Disposition the Flax receives the full Benefit of the Sun and Air, and is preserved from the Damage it would sustain by Rain. * This is the Method constantly practised in uncertain dropping Seasons; but should the Weather be settled and very good, and the Farmer desirous of making his Flax expeditiously, all he has to do is to lay it in Handfuls on the Ground and turn it frequently, cautiously observing to keep the Ends regular. If the Weather continues favourable, twelve or fourteen Days generally suffice for this Part of the Farmer’s Work; but if it be showry, the Flax must lye in the little Heaps before described about eighteen or twenty Days, and sometimes longer, until it be sufficiently made, and then it is bundled up for Carriage.

‘ It has been recommended to our Farmers in some Instructions published with your Approbation, and made a Condition of their Contracts with the Linen-

* If in this Country where the Winds are often violent, there should be any Inconveniencies in following the *Dutch* Method strictly, the Reader will find a different one recommended by another Correspondent at the End of No. 44.

Board,

Board, That they should stack the Flax immediately from the Field, and keep it unrippled in the Stack until the Beginning of *December*. This Practice, I am afraid, is attended with considerable Inconveniencies, and does not answer the good Ends proposed by it; I shall therefore beg Leave to offer my Reasons against it here, and I hope it will be understood as a Proof of my high Regard for the SOCIETY, that I address them to you, Gentlemen, who, I am satisfied, have the Information and Good of the Publick principally at Heart, and will cheerfully encourage any Thing which contributes to it, tho' it should unluckily run counter to some of your Directions published with the same Design.

As I have hitherto rested chiefly on the Authority of the *Dutch* and *Flemings*, who must from long Experience be supposed perfectly acquainted with every Branch of the Linen Manufacture, I should not presume to contradict the SOCIETY's Directions, if I were not very sure that I have those experienced Artists on my Side. From whatever Hands you received your former Informations, I must assure you, Gentlemen, that upon a strict and particular Enquiry, I found the Fact quite otherwise. I saw no Signs of stacking or housing unrippled Flax in any Part of *Holland*; and when I asked the Question, I was always answered in the Negative. And indeed, I am surprized how any one could be led into so unlikely a Mistake, as to recommend stacking from their Practice, since it is notorious, that in *Holland* the Flax is never stacked at all either rippled or unrippled. I know no other Way of accounting for an Assertion so contrary to undoubted Facts, than by supposing that the Persons on whose Information you depended have unwarily confounded two very different Directions. 'Tis indeed the *Dutch* Practice and Advice not to separate the Seed from the Bole 'till some Time after it is pulled, but I am bold to say, that they neither

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' delay rippling it themselves nor advise doing so to
 ' others. The Case, I have Reason to think, is the
 ' same in all Flax Countries. The Seed we have
 ' from *Riga* has undoubtedly not been stack'd. The
 ' Concern of their Magistrates to secure the Repu-
 ' tation of their Flax-Seed makes them exceedingly
 ' careful, when the Foreign Demands are answer'd,
 ' to call in the remaining Seed of that Season, and to
 ' keep it for the Oil-Mills. We may therefore be
 ' confident, that the Seed we have from thence is
 ' that of the immediately preceding Harvest, and by
 ' a necessary Consequence, that it has not been stack-
 ' ed. Were it otherwise, those Northern Seas are
 ' generally frozen so early in the Year, that our Ships
 ' must sail from thence unladen. Their Seed could
 ' not be rippled, threshed and cleaned, and then
 ' brought a considerable way from the Inland Pro-
 ' vinces of *Lithuania* and *Livonia* to the Coasts in
 ' Time.

' This Letter is so long already, that I must post-
 ' pone all farther Considerations upon this Subject to
 ' the next Opportunity.

I am, &c.

R. W. M.

N^o. XIII. *Tuesday, March 29th, 1737.*

GENTLEMEN,

' **A**S I have chiefly confin'd myself in the Course
 ' of these Letters to the Use of Arguments
 ' drawn from the Practice of other Countries, I shall
 ' not engage very far in those of another Kind to
 ' shew the Disadvantages of stacking the Flax unrip-
 ' pled. I am indeed convinc'd, and so will every
 ' one, I believe, who seriously considers it, that the
 ' Seed can receive no Benefit from a sapless dry Stalk,
 ' which retains no Moisture, and consequently no
 ' Nourish-

' Nourishment, if it has been made with proper Care.
 ' But as I have often way'd Considerations of this
 ' Kind; I hope to be excused by the more curious
 ' Observers upon Nature, if I continue to do so at
 ' present. There are Arguments against this Practice
 ' more obvious to all Capacities, and for that very
 ' Reason of more general use. Upon these I choose
 ' to let the Matter rest, and beg leave to insist upon
 ' each of them distinctly.

' The Receipt inserted in the Society's former In-
 ' structions, to destroy Vermin in the Stacks of un-
 ' ripped Flax, is a sufficient Proof that they were
 ' aware of an Inconvenience in Stacking the Seed and
 ' Flax together. They were sensible this Practice
 ' would invite Rats and Mice to make their Nests
 ' among the Flax, and accordingly prescrib'd a Re-
 ' medy. I have not heard with what Success it has
 ' been tried, but I must beg leave to think, it would
 ' be a more prudent Conduct to avoid the Evil, than
 ' to trust to an uncertain, and at best an imperfect
 ' Cure. The Vermin must make their Way to the
 ' Poison thro' the Flax, and cut and mangle it before
 ' they meet their Bane, and therefore, notwithstanding
 ' all Precautions, the Farmer is visibly a Sufferer by
 ' this Method, and must lose a considerable Portion
 ' of his Flax. Should Vermin come at his Seed,
 ' when it is separated from the Stalk, which however
 ' is more easily prevented since they have no Conceal-
 ' ments on the Floor, the Loss is only in the Seed,
 ' whereas the Damage in the Stack falls also on the
 ' Flax, and upon that Account is considerably greater.

' There are other and greater Disadvantages at-
 ' tend the stacking of our Flax unripped. The Seed
 ' heats more easily in the Stack than on the Floor.
 ' The Evil is not so soon discovered, and the Re-
 ' medy attended with more Labour and more Cost.
 ' It is too obvious to be insisted on, that you run dou-
 ' ble Hazards of pernicious Damps when you have
 ' both Stalks and Seed together. Nor is it less noto-

' rious,

' rious, that, notwithstanding all Precautions, the
 ' Heart of a large Stack may be considerably da-
 ' maged before any signs of Heat appear, whereas
 ' upon the Floor they immediately betray themselves.
 ' And in the third Particular, the Disproportion is
 ' still plainer—A Stack cannot be thrown without
 ' shedding a great deal of Seed, nor rebuilt without
 ' considerable Labour; whereas airing your Boles
 ' upon the Floor is done with little Trouble, and al-
 ' most at no Expence. These are Inconveniencies
 ' incident to this Method in all Seasons, and in unset-
 ' tled Weather they become intolerable. Some Har-
 ' vests are so wet, that it is hardly possible perfectly
 ' to make the Flax, and should the Farmer at such
 ' Times be prepossessed with the Necessity of stack-
 ' ing, he has scarce a single Chance to save his Crop.
 ' The least Damp, which is then almost unavoidable,
 ' will heat his Stack, which by the Weight and Pres-
 ' sure of a large Quantity of Flax and Seed together,
 ' falls in too close to let in Air; while on the con-
 ' trary the Seed rippled from the Flax, but preserv'd
 ' in the Pod or Bole, lyes light and hollow, and
 ' may therefore, tho' it retain'd a little Moisture, be
 ' preserv'd from Damage without any considerable
 ' Pains.

' The Delays which attend this Practice afford
 ' another and an unanswerable Argument against it.
 ' The watering of the Flax is prevented for one Sea-
 ' son, and consequently every other Branch of Linen
 ' Manufacture proportionably retarded. Hence the
 ' Benefit of a quick Return, one of the greatest En-
 ' couragements to Trade, is lost in some Degree to
 ' every Person concerned in our Staple, and intirely
 ' so to the poor Farmer. The Sale of his Flax and
 ' Seed being delayed till *January*, comes too late to
 ' pay his Rent, and defray the necessary Expence of
 ' preparing his Lands for the next Crop; or should
 ' he borrow to answer those Demands, he must pay
 ' an heavy Interest for his own, which eats out his little
 ' Profit.

' Profit. Let us suppose a Farmer has twenty Acres
 ' under Flax, if the Land be good and well prepared,
 ' and the Season favourable, his Crop at a moderate
 ' Computation is worth five hundred Pounds, and
 ' consequently the half Year's Interest which he loseth,
 ' by bad Management, amounts to fifteen Pounds.
 ' Few Farmers can bear so considerable a Drawback
 ' upon their Profit, and I can see no Reason to en-
 ' courage them to do it. The only Shadow of an
 ' Argument in favour of this Method is taken from
 ' a Supposition, that the Seed is the better for it; and
 ' this grounded upon the Farmer's Practice in his
 ' Wheat, which he generally sows immediately from
 ' the Flail. But, as it is impossible to assign any Reason
 ' for this Assertion from the Nature of the Thing, so
 ' the Presumption drawn from the Practice of our
 ' Husbandmen is intirely built on a Mistake. 'Tis
 ' not from Choice, but from Necessity, that the Far-
 ' mer pursues that Method. The sowing Season comes
 ' so close upon his Harvest, that he has no Time to
 ' spare; and if he will sow Wheat at all, he must do
 ' it from the Threshing Floor. In other Grains the
 ' Case is different, and so also is the Practice; and I
 ' never heard that any understanding Husbandman
 ' objected to Seed of the same Season from its being
 ' thresh'd too early. The Seed therefore, by any
 ' Thing that hitherto appears, is certainly not the
 ' worse for early rippling; and I must add, that the
 ' Flax itself is undoubtedly much the better. For
 ' immediate watering, which cannot be done with-
 ' out immediate rippling, is of considerable impor-
 ' tance; the Bunn ferments with ease, before it has
 ' had Time to harden; and the Harle, by a neces-
 ' sary Consequence, comes out the stronger and the
 ' finer. The sole Design of watering the Flax is to
 ' rot the Bunn, in some Degree, that it may part
 ' more readily from the Harle; and the sooner the
 ' Flax can be brought into a proper State for that
 ' only End intended, 'tis certainly so much the bet-

ter. When it remains a considerable Time in Water, the Harle itself ferments, suffers considerably in Strength and Softness, and at last will rot together with the Bunn. Too long watering therefore is evidently pernicious, and yet by stacking the Flax unrippled till the Winter, is really unavoidable; the Bunn by lying so many Months unwatered becomes hard and tough, adheres strongly to the Harle, and will not part from it without a long and violent Fermentation; which, tho' it be then indeed by bad Management become necessary, is however nothing the less destructive.

I must add that, independently of this, Autumn is the best watering Season. The preceding Summer's Heat has then mellow'd and soften'd the Water; whereas in *May*, which is the Time of Year generally made use of by those that stack unrippled, it has hardly lost any thing of the Harshness contracted in the Winter.

And now, GENTLEMEN, having gone thro' the several Branches of Flax-Husbandry, I shall take my Leave of the Reader for a while. The Observations I have by me upon Flax-dressing are a Subject by themselves; and as I could wish, for the Interest of the Manufacture, that Flax-farming and Flax-dressing were different Employments, I choose for that very Reason to treat of each of them a part.

It would be a considerable Satisfaction to me, if I could hope that what I have already said could be useful to my Country. It has long given me great Concern to see our Flax-Farmers afraid of using their best Lands, deep and heavy Clays, giving those they choose a slight and superficial Culture, losing their own Seed while they imported that of other Countries, and spoiling their Flax by keeping it unwatered all the Winter. I have therefore set myself particularly against those Errors; and if I shall find that I have done it with Success,

‘ Success, I shall think my Pains abundantly rewarded *.’

I am, &c.
R. W. M.

* There have been many Objections started against this Letter, and many Arguments offer'd to support the Practice of stacking Flax unrippled, which have reach'd the Gentlemen of the Society. But, as nothing has hitherto occurred to them which has an equal Appearance of Reason with what the Author of the Letter has advanced, they think themselves obliged not to withdraw their Approbation of it till something more material can be said against it. The Practice of the *Dutch*, if the Question is to be determined by Precedents, is undeniably of greater weight than ours. If Argument is to decide it, nothing appears more plausible than our Correspondent's Reasoning. One way remains, that of regular Experiments; and whenever Gentlemen will afford us an Opportunity, we shall readily communicate any exact and accurate Trials on that Subject, to be canvass'd by the Readers. One Caution only we shall beg Leave to give them; they must prove that some Benefit accrues either to the Flax or Seed, by being stack'd together, since it were plainly injudicious to recommend Delays without some Prospect of Advantage.

Nº. XIV. *Tuesday, April 5th, 1737.*

THE Success of those excellent Letters upon Flax and Flax-Seed, which for some Time past have entertained the Reader, give us great room to hope that there is a publick Spirit kindling among our Countrymen. The Example of our ingenious Correspondent has rais'd in others an Ambition to be useful, which has shew'd itself in several Shapes, in the many Congratulations, Objections, Queries, and Essays upon different Subjects which we have received since their Appearance. Among these we shall select, at present, those which immediately relate to the Culture of Flax and Flax-Seed, and throw together in this Paper such Observations on that Subject as will naturally arise from them. And here we must desire the Reader to excuse the want of Order and Connexion; Queries and Objections coming

from several Hands necessarily want them, and we must follow as they lead us.

None of our Correspondents have directly objected to the Choice of Clays, as the best Flax Lands; but many of them have proposed Doubts and started Difficulties worth considering, in relation to their Culture.

Some have imagin'd, that laying them as flat as is directed might obstruct the Husbandman in another Article of great Importance, that of early sowing. But this Suspicion seems to take its Rise from a Mistake; it was never recommended to lay the Ridges broad and level during the Winter Season. The narrower and the higher they are then the better, the more exposed to Frost and Sun, and Air, and consequently the more broken and more mellow'd. 'Tis only in the last Ploughing, and as our Correspondent has expressed himself, at the Time the Land is—
Fitting for the Seed, that the Ground should be levelled to receive it.

As our Clay Lands differ in their Situation from those in *Zealand*, which all lye upon a Flat, whereas ours are often found on the Declivity of Hills, others seem to be afraid that the same Culture will not suit them both. They are apprehensive that our Clays lying on the Sides of Hills, were they reduced to the same Tilt as the level Clays in *Zealand*, would, in the Winter-time, be rob'd of the best Part of their Substance, by the great Flow of Water in their Furrows. Those little Torrents which then fall with great Force along the Hill, washing down the richest and the finest of the Mold.

The true Answer to this Objection is to assign a Remedy, and teach the Husbandman to remove an Inconvenience, which, in the common way of Ploughing, constantly attends good Tillage on the Sides of rising Ground. This may be done by horizontal Ploughing. Instead of drawing his Ridges as usual, up and down the Hill, the Farmer must lay them
cross-

cross-wise to the Descent, and as near as possible in Lines parallel to the low Grounds at bottom. By these means, the Water falling upon the Ridges is stop'd by the next Trenches, has no farther Progress down the Hill, and loseth all its Violence. We would not indeed advise the Farmer to let it stagnate in those Trenches, it would then soak into the Ridge below it, drench the Ground, and spoil his Crop. But two Trenches down the Hill, one on each Side of his Field, will, if they be well drawn, and pretty deep, drain the Ground sufficiently. The Experiment has been tried by some Members of this SOCIETY; and we may assure the Farmer, from their Knowledge, that the Success surpass'd their Expectation. Before we conclude this Paragraph, it may be useful to observe, that as this Objection affects Flax no farther than it does any other Crop, which requires the same repeated Ploughings, so the Remedy prescribed becomes of general Use, and will answer the same Purposes in every Branch of Husbandry.

We could wish it were as easy to remove a third Objection to the laborious Tillage of Flax Grounds, recommended in our Correspondent's Letters. It is taken from the great Distress and lamentable Poverty of Farmers in this Country, where hardly one in twenty has the necessary Means of executing our Directions, however thoroughly convinced he may be of their Expediency. This Difficulty is indeed a great one, and not to be got over without the ready and effectual Concurrence of the landed Interest in this Kingdom. But if Gentlemen of Fortune would join with Heart and Hand in promoting the Interest of their Country, by which their private Interest in the End must either stand or fall, their Tenants might be easily enabled to pursue a Method which, in a little Time, would advance the Linen Staple to a Height, where it will never arrive without it. — We shall add in the Words of a Letter dated from *Port Neill*, that till this Spirit can be raised among

the Landlords—‘ The richer sort of Farmers should
 ‘ forward such a Practice ; that from their Experi-
 ‘ ence they might prevail on others to imitate their
 ‘ prosperous Beginnings.

A Gentleman, who has concealed both his Name and Abode, objects to the same Tillage from another Principle. ‘ I can’t but think (for we shall give his
 ‘ Thoughts in his own Words) there is ground to
 ‘ apprehend, that if our Flax in *Ireland* were sown
 ‘ upon such rich and well cultivated Ground, it
 ‘ would only be in very favourable Seasons that we
 ‘ could expect its coming to Maturity. The Rains
 ‘ we have in most Summers would lay it flat before
 ‘ it came to be ripe, and ruin the Crop both for Flax
 ‘ and Seed.’

To this the Answer is as short as it is obvious. Sow thin, and your Crop will stand. No Ground can be too good if the Quantity of Seed be proportioned to its Richness ; and whenever a Crop fails upon strong and mellow Soils, they are certainly overburthen’d. The Stem of every Plant requires the free Admission of the Sun and Air to strengthen it ; when that fails, as it always must where the Seed is thrown in without Discretion, the Stem wants its due Consistency, yields to the least Accession of foreign Weight from Rain, breaks at bottom, and so lodges to the utter Ruin of the whole Crop ; whereas upon thin sowing, Air, Sun, and Wind have free Access to every Plant, keep the Stem dry and tough, able to recover with a Spring when it is bent, and thereby to shake off the Rain.

The Culture of the Flax-grounds is not the only Point objected to. We have received a Letter from *Banbridge* with the following Apology for that destructive Custom, pulling the Flax green. ‘ For the
 ‘ most part, when we have let our Flax stand till it
 ‘ be ripe, it fires and turns brown. This peculiar kind of Blight begins a Fortnight or more
 ‘ before the Flax is ripe ; the Bole fires first, and then
 ‘ the

‘ the Stalk, and when this happens, if the Flax be
 ‘ not pull’d immediately, it becomes coarse and stub-
 ‘ born, runs to Tow, and makes a spritty Cloth;
 ‘ and this is so hard to whiten, that scarce any Thing
 ‘ except the Rub-boards will take out the Sprit: Be-
 ‘ sides, the Firing kills the Seed, so that it neither fills
 ‘ nor ripens after it.’

This is the Apology, and perhaps the only one
 that can be made, for a Practice so visibly pernicious:
 We are therefore greatly pleas’d, that the anonymous
 Correspondent, before-mention’d, has afforded us a
 just Reply in an Article of his ingenious Letter. It
 shews that a Spirit of Attention and Inquiry is gain-
 ing Ground among us, when we thus can set our
 Correspondents in Opposition to each other, and an-
 swer the Objections of some by the Observations of
 others.

That Part of his Letter which relates to this Arti-
 cle stands thus. ‘ That clayey Lands are the best
 ‘ for Flax will admit of no Dispute among those
 ‘ who have any Experience in this Branch of Agri-
 ‘ culture. Light Soils are subject to a Distemper
 ‘ which the Country People call Firing, by which
 ‘ the Flax, before it ripens, turns suddenly of a red-
 ‘ ish brown. This Flax proves spritty in the Cloth,
 ‘ and is not without great Difficulty brought to a good
 ‘ and even Colour in the bleaching.’ This Observa-
 tion fixes the Evil on its proper Cause; ’tis the wrong
 Choice of Soils, that lays the Farmer open to these
 hazards, which the deep rich Clays are not exposed
 to. Our Correspondent adds, and with a great deal
 of Reason, that, ‘ Weeding Flax in a Clay well pre-
 ‘ pared is but a small Expence, to what it proves in
 ‘ a light loamy Soil.’ Which we have also added,
 as an additional Argument, to recommend the Choice
 of Clays, and the proper Culture of them.

We hope this Gentleman will excuse the Liberty
 we have taken of parcelling out his Letter in this
 manner. He has done the SOCIETY more Honour

in expressing his Sense of their Performances, than they were willing to take to themselves; and thereby laid them under a Necessity of giving only Abstracts of a Letter, which did, otherwise, very well deserve to be published at full Length.

There are still in that and other Letters on the Culture of Flax-Seed many material Observations, which may, at a proper Time, afford Matter for another Paper. M.

N^o. XV. *Tuesday, April 12th, 1737.*

THE following Letter concurs with those already published on the Culture of Flax and Flax-Seed, in recommending strong, rich, and clayey Grounds, and contains an ingenious Illustration of that important Point, drawn up with an immediate Reference to the peculiar Qualities of the several Soils in *Ireland*. This Circumstance will excuse us to the Reader, for resuming a Subject which we seemed to have dismissed; since it becomes a new one in some measure, by the new and useful Light in which it is considered.

GENTLEMEN,

‘ **T**HE Letters published in your Papers, on the
 ‘ Culture of Flax and Flax Seed, have, from
 ‘ the great Success of them in *Zealand*, advis’d our
 ‘ Husbandmen to the Use of deep stiff Clays, as the
 ‘ fittest Lands for Flax. This in general I take to
 ‘ be rational Advice. But as the Nature of our Soil
 ‘ differs much from that of *Zealand*, and we have
 ‘ Variety of Loams which are not to be found there,
 ‘ I hope it may be useful to enlarge your Directions
 ‘ on that Head, and apply them more particularly
 ‘ to the Circumstances of this Kingdom.

‘ According

' According to some Naturalists there are many
 ' Sorts of Soils, which differ from one another in
 ' their Ingredients, Weights, Colours, and Con-
 ' sistencies; but to take in at present the most con-
 ' siderable Differences only, I conceive that all Earths
 ' may be conveniently reduced to two general Princi-
 ' ples, Sand and Clay; and from the different Mix-
 ' tures and Proportions of those two Ingredients, the
 ' great Variety of Soils easily accounted for. Under
 ' the Class of Sandy Soils will be comprehended not
 ' only mere Sands, but all gravelly, stony, hazely,
 ' light loose Soils which do not hold Water, and un-
 ' der Clays, besides the stiffer Kinds properly so
 ' called, Marle, Chalk, and all other binding Soils,
 ' which naturally retain it.

' Neither Sands nor Clays are, separately taken,
 ' good vegetative Soils: But when they are mixed
 ' in due Proportion, they become rich Loams and
 ' afford the best of Crops; not indeed every Crop
 ' indifferently, but according to the several distinct
 ' Proportions of Sand and Clay which they contain,
 ' some one and some another. Different Plants re-
 ' quire different Degrees of Stiffness, Lightness,
 ' Heat and Moisture in the Soil, and therefore a pro-
 ' per Loam for one may be highly improper for an-
 ' other.

' Those Soils which incline most to Sand are rea-
 ' dily exhausted, and afford little Nourishment.
 ' Sand itself, which is no more than a Collection of
 ' small Pebbles, can yield none, and the Earth which
 ' is mixed among it, when in a small Proportion,
 ' can't supply the large Demands of a weighty Crop
 ' of Vegetables.

' Clayey Soils, on the contrary, are indeed nutri-
 ' tive all over, capable of being broke into the smallest
 ' Particles, which become by their Minuteness, the
 ' proper Food of Plants. But then they are apt to
 ' bind and cling, and in that State are as absolutely
 ' useless as the very Sands themselves.

‘ These Defects, however different in their Cause,
 ‘ are therefore much alike in their Consequences, and,
 ‘ as I before affirmed, mere Clays are, as well as
 ‘ mere Sands, naturally unfit for Vegetation.

‘ But however, there is a considerable Difference
 ‘ between them. Sands are to all human Art intirely
 ‘ irreclaimable without new making the whole Soil
 ‘ by mixing it with Clays, a Method commonly im-
 ‘ practicable, and always in a high Degree expen-
 ‘ sive ; whereas the stiffest Clays may be reduced into
 ‘ a Tilth by Labour, and the natural Influence of
 ‘ Frost and Sun and Air.

‘ Thus the dry sandy Deserts of *Africa* and *Asia*
 ‘ will remain Deserts while the World endures ;
 ‘ whereas the deep stiff Clays of *Zealand* are by in-
 ‘ defatigable Industry, become rich and fertile Soils.

‘ It is true indeed that in *Egypt* the Soil is very
 ‘ sandy, and yet affords great Quantities of Corn and
 ‘ Flax, infomuch that that Country is now a Granary
 ‘ to the neighbouring Parts of the World, as it former-
 ‘ ly was to the *Romans* ; but this is owing to a natu-
 ‘ ral Advantage which no Art can imitate. The In-
 ‘ undations of the *Nile* carefully husbanded by the
 ‘ Inhabitants, who prevent the total Ebbing of the
 ‘ Waters by receiving them in Reservoirs, give
 ‘ those sandy Plains all that Fertility they have,
 ‘ and, without the excessive Moisture with which they
 ‘ are drenched once a Year, and the rich oily Slime
 ‘ which the Waters leave behind them, *Egypt* would
 ‘ be as barren as the neighbouring Sands of *Libya*.

‘ ’Tis our Happiness that we have none of those
 ‘ Sands in *Ireland*. Our lightest Soils are Gravels,
 ‘ of which we have several Kinds, which gradually
 ‘ improve into Loams of different Consistencies, and
 ‘ end at last in Clays. These Gravels, Clays, and
 ‘ the intermediate Loams, are all the Soils we have,
 ‘ Moors excepted, which are nothing else than Loams
 ‘ drenched and soaked in Water : Of these I shall
 ‘ say but little. If they were drained and duly tilled,

‘ they would fall under the Head of Loams ; till they
 ‘ are so they are useless and unprofitable. Each of
 ‘ the other Kinds I shall speak to in their Order.’

‘ Gravelly Soils are generally dry, shallow, hun-
 ‘ gry, skully, apt to be scorched up in a dry Sum-
 ‘ mer, and consequently not fit for Flax. They may
 ‘ be usefully laid down in Sheep-Walks, the Staple
 ‘ being shallow and the Grass sweet and short ; but
 ‘ for Flax or any other weighty Crop, they want both
 ‘ Strength and Moisture, without which neither Flax
 ‘ nor any other Seed sown late in Spring and upon
 ‘ the Approach of Summer, can well thrive.

‘ ’Tis true that in *Livonia, Courland, and Mus-*
 ‘ *covy*, the Soil is light and sandy ; but it is a sandy
 ‘ Loam mixed with great Quantities of Clay, and
 ‘ very different from our Gravels. Besides, these are
 ‘ covered with Snow for five or six Months in the
 ‘ Winter, and when that melts in *April*, the Soil be-
 ‘ comes moist and rich ; and to these constant Snows,
 ‘ and the succeeding great Heats of the Sun their Fer-
 ‘ tility is owing. Here where we have not this natural
 ‘ Advantage, when there is a Necessity of sowing them,
 ‘ the Way of improving such Gravels is to manure
 ‘ them with Marle, Lime, Mooring, or other Stuff
 ‘ which may enrich the Staple and keep it moist.
 ‘ This brings them into a Kind of Loam of different
 ‘ Goodness, according to the Strength and Quantity
 ‘ of the Manure ; but however never equal to the
 ‘ natural Loams or Clays, and indeed never thorough-
 ‘ ly fit for Flax.

‘ Clays are to be found in most Parts of *Ireland*,
 ‘ they are naturally moist and to them the Richness
 ‘ of all our Soils is owing. Every other Soil being
 ‘ good in Proportion to the Quantity of Clay that it
 ‘ contains. I have observed already that they require
 ‘ laborious Tillage, I shall add here, that they de-
 ‘ serve it ; and when brought into a thorough Tith,
 ‘ afford the richest Crops. But at the same Time it
 ‘ must be owned that genuine, stiff, and unmixed
 ‘ Clays

• Clays are seldom perfectly subdued without the Assistance of Manures. Sand, Gravel, or other Mixtures will facilitate their Culture, and lessen the strong Cohesion of their Parts, which is otherwise too stubborn for the Patience of any but a Zealous Farmer.

• 'Tis therefore an Advantage that none of our Clays are intirely free from Sand, but incline all of them to Loams. These abound in several Parts of the Kingdom, especially *Leinster*, *Munster*, and *Connaught*, where many of our Pastures consist of a deep rich black Mold made up of a great Proportion of Clay, broken and divided by a Mixture of some Sand. Of this Sort are also the Corcus and Marsh Lands in the Counties of *Limerick*, *Clare*, *Kerry*, and *Tipperary*, which seem to be new Soils made by the Rivers and Rains washing down and lodging the fine Particles of Clay, Sand, and Shells upon those Bottoms. 'Tis the skilful Husbandman's Endeavour to make artificial Loams by mixing Clays with Sands, or Sands with Clays, and to do this effectually requires a vast Expence: But here Nature has done the Work to our Hands, there is no Need of gathering Manures or making Composts for these natural Loams; nothing more is wanted than to give them proper Tillage. Without this indeed the best of them will not answer, and the richest Soils less than any other. Several have plowed up these Loams and were greatly disappointed in the Produce: They trusted wholly to the Richness of the Soil, and that very Richness was the Cause of their Disappointment: They neglected to give it proper Tillage, and when they expected a Crop of Corn or Flax, had little else but Grass. Natural Grass thrives so well in these rich Soils, that except the Roots of it are carefully destroyed it springs up immediately, grows to a great Height, and gets the better of every Thing that's sown.

I mention this as an additional Argument for good Tillage, which can never be too much recommended to the Farmer, and I dare assure them from repeated Trials, that nothing else but frequent Ploughings, and a Summer fallowing will remedy this Evil.

Upon the Whole, it appears by this short Survey of the Soils of *Ireland*, that except our gravelly light Grounds they are all adapted by Nature to the successful Culture of Flax and Flax Seed. The Countries which at present supply us with the latter, are confined to the two Extremes of sandy Loams and deep stiff Clays; We have, besides, all the Loams of different Consistencies which lye between them, and consequently the Advantage of some of them by the Richness of our Grounds and of others by 'a less laborious Tillage. If therefore we do not succeed, the Fault is wholly in ourselves; we have Land at Will, Variety of Soils and Situations, low, deep, moist Grounds which will answer in the hottest Summers, and in cold wet Seasons Uplands and drier Loams.

I shall conclude by observing that nothing I have said, can, without wresting my Design and Expressions, be understood as a Discouragement to the Use of Clays; I have declared my Approbation of them under proper Management: What set me on writing this was only an Apprehension that our Farmers might adhere too closely to the Letter, confine themselves to Clays and neglect rich strong Loams.

I am, &c. P.

N^o. XVI. *Tuesday, April 19th, 1736.*

THERE are many large Tracts of Ground in this Kingdom bordering on the Sea, or on large Rivers, which at high Tides, or in great Floods, are constantly overflown, and at other Times so frequently

quently covered and so much injured by Water as to be of little Use to the Owners, and often destructive to their Cattle. These Lands, from the Slime and Mud deposited there by the Waters, become in Time extremely rich, and would prove in Meadow, Pasture or Tillage, more fruitful and profitable than any other Soils, if they could be secured from Inundations. Of this Kind there are many thousand Acres in this Country which would afford great Profit to the Owners if reclaimed, that are now of no Kind of Use, and by the Damps and Smells rising from them injurious to the Health of the Inhabitants. Great Numbers in other Countries, and some few among ourselves have attempted the Recovery of such Lands with great Success; but the Generality of our People have neglected this Kind of Improvement, either from the Want of Skill and Experience in the Management, or from the Apprehension that the Expence would be too great. It will therefore be of considerable Service to shew, as we propose to do, from the Practice and Experience of others, that by the Means of sloping Banks, which are made broad at Bottom and narrow at Top, all such Lands may be recovered and effectually secured from the Damage they receive by Water, and this at an Expence very inconsiderable when compared with the ensuing Profit. To do this more exactly, and because a different Management and Expence is required in making the Banks designed against the Sea, and those against the Floods of Rivers, we shall at this Time confine ourselves to those Directions which are necessary to prevent the overflowing of Tides, and postpone the Consideration of the other Part to another Opportunity.

If you have Marsh Land that is subject to be flooded by High Tides, and are willing to make a sloping Bank, that shall effectually exclude the Sea, and prevent any future Damage, such Bank may be made in the following Manner. In that part of the Marsh, or Strand next the Sea, where you would
raise

raise a sloping Bank, dig a broad Trench of 10 or 12 Feet wide, and 2 or 3 Feet deep, or more, according to the Height and Breadth of the Bank required; if the Ground is covered with Grass, reserve the Sods that you cut off, for future Use, and with the Soil that you throw up out of the Trench, make the Bank in the following Form.

Lay all the Soil that you take out of the Trench on that side of it that lyes towards the Sea, and leave a space of two or three Feet between the Trench, and the Foot of the Bank. The Height of the Bank must be regulated by the Height of the greatest Tides, which seldom exceed three or four Feet from the Surface of the Marsh they overflow; but should they in any Place rise more, the Bank must be raised accordingly, and great Care taken that the Bank be one Foot higher at least than the very highest Tide. When you have raised the Bank to the proper Height, make it at Top about two Feet wide, and flat to walk upon, with an easy descent or slope towards the Sea, of fifteen or eighteen Feet in Length, allowing the Slope two and a half, or three Feet fall to one Height, but the inside Slope need not be more than eight or nine Feet, which is a Foot and a half Slope to one Foot perpendicular; by this means you will have a Bank five or six Feet high, and two Feet broad at Top, with an easy Slope towards the Sea, and a steep Slope towards the Land. The Sods reserv'd at the first opening of your Trench, may be employed in making the Breast of the Bank on the Inside, and in covering the Bottom of the Slope towards the Sea, to break the Force of the Waves in ordinary Tides, and to prevent the wearing or washing away of the Soil at the first making.

When you have raised the Soil out of the Trench, and formed the Bank in the manner above-mentioned, the next Business is to give it a covering of Grass; raising thin Sods or Scraws from other Ground, and then carrying and laying them on the Slopes, is attended

tended with great Expence, and is often of no use; for upon dry Weather the Sods are apt to shrink, open, and part from one another, and are then liable to be all carry'd away by the next Tides; the most effectual, and by much the cheapest way, is to make the Slopes even and smooth, rake them fine, and then sow them very thick with Hay-seed. This in a Month or two's time will grow to such a Height as to be fit for Mowing, and will afterwards prove the best Defense against the Force of the Waves, which by the easy Slope, and the close covering of Grass, will be hindered from breaking the Bank, or washing away the Surface of it.

You may bring any tolerable Soil to an immediate Coat of Grass, if you break and rake it fine, and sow it thick with Hay-Seeds, for in a Week or ten Days in the Spring or Summer they will be up, and grow to such a Height in a Month or six Weeks, as to be fit for Mowing.

Some have made Walls of Stone and Lime, to keep out the Sea, and others have raised perpendicular Banks of Sods to prevent the overflowing of Rivers; but after they had been at an excessive Expence in this Management, they soon found all their Works destroyed; the Waters bearing with great Force on such upright Walls and Banks, carry'd all before them; but when they flow on an easy and gradual Ascent, and meet with no Resistance, they can do no harm.

The making broad Trenches near the Banks, according to these Directions serves two Purposes. 1st, It affords Materials for making the Banks and Slopes; and 2dly, serves for a Drain to the Inland Ground, by receiying all the Rain Water which may fall thereon. These Trenches should be carried as far as the Banks all along the Sea, and in the lowest Part of them a Sluice with a Valve, Flap-Door or Flood-Gate should be placed, which will both discharge the Inland Water, when the Tide is out, and prevent its coming in. It

It is advisable in making such Banks to be as expeditious as possible, and to employ all the Hands you can; the longer you are at Work, the more you will be subject to be disturb'd by the Tides. Whereas, if you begin this Work in a dry Summer, and finish it in a Month or two, you will run little Risque of being interrupted, either by them or by violent Storms, which might do more Harm in a Day than you can retrieve in a Fortnight.

Lord Limerick has recovered between four and five hundred Acres of very rich Salt Marsh at *Dundalk*, and effectually secured them from the Sea, by such Banks as are here described; and by the same Method many hundred thousand Acres have been recovered from the Sea in *Cambridgeshire*, *Lincolnshire*, and other Parts of *England*, not to mention the Low-Lands of *Hollands* which indeed are all secured against the Violence of the Sea by no other Means.

If you are under a Necessity of making Banks on a Strand, where you can meet with nothing but Sand, let your Banks be large, and the Slope very broad and extended; and if Hay-Seed will not grow on them, plant Sea Weeds, which with sticking Furrs, Straw, or Loppings of Trees in such Banks, to bind and keep the Lands the better together, has been found of Use, and may be done where the Case requires it.

It sometimes happens, that the Sea flows in through a narrow Gut or Passage, by which the Inland Waters are discharged, and then extends itself and covers a great deal of Ground. When this happens, if the Inland Waters cannot be diverted into another Course, since a Passage must be left for their Discharge, fix a strong Sluice in the lowest Part of the Channel, with large Piers of Stone running out for its Support, and a strong Foundation of Wood or broad Stones, for the Water to run over. When this is done, then in the Manner before-mentioned make your Banks of

Sand, or any other Soil near at hand, on each Side of your Sluice.

The Reason why it is advised, in Places where a Sluice is to be made, to begin your Work by that rather than by the Banks, is, that while the Sea has Liberty to flow in and out at a great Breadth, you may make your Sluice in any Part of the Channel without being much incommoded by the Tide; whereas if you defer it till the Banks on each Side are made, the Force of the Tide when confined to a narrow Passage, will tear up all before it, and make the building of the Sluice impracticable; and upon the same Account the Banks should be begun at the lowest Part of the Channel, and from thence carried on to the upper Grounds.

We shall conclude these Directions by observing, that if by any Accident the Waters should swell so high as to overflow and tear the Banks, you may prevent farther Mischief, by fixing with all Expedition a Sail Cloth or Sheet of Linen at the Bottom of the Bank, where the Flood breaks in; for if this be done in Time, the Water will flow over the Linen without washing away the Bank.

P.

No. XVII. Tuesday, April 26th, 1737.

HAVING shewn in our former Paper the Method of securing Marsh-Grounds bordering on the Sea, from being overflowed by high Tides, we shall now proceed to give Directions for banking out the Floods of Rivers from the low flat Lands which lye contiguous to them.

This is particularly requisite in *Ireland*, because there is no Country in *Europe* where Rains, and consequently Floods, are more frequent; and at the same Time practicable here at less Trouble and Expence, because our Rains and Floods, though more frequent, are not so violent as in other Countries. We are ex-

posed

posed to the Western Ocean, from whence are raised those Vapours which supply this Part of the World with Rain; and 'tis foremost in the Course of the Westerly Winds which convey them. Hence those Vapours begin to precipitate with us, and descend in easy Showers; but in their Progress Eastward, meeting with higher Mountains and cooler Air, which obstruct their Passage and condense them, they come down in large Quantities together and fall in heavy Rains.

This Situation, if prudently husbanded, might be turned to an Advantage. The many Rivers formed by these constant Falls of Water would afford us, at a small Expence, a commodious and expeditious Intercourse between the most distant Parts of this Island; but we suffer this Benefit to turn to our Prejudice. By neglecting to remove Obstructions and Stoppages in Rivers, and to widen their Channels, we not only lose the Conveniencies they offer us, but besides, the Use of the low and level Grounds along the Sides of them, which are generally our richest Soils. These being covered all the Winter long with Water, and in Summer by every Flood become in a great measure useless, and produce at best but a four coarse Grass. The most valuable even of our Meadows, which lye along the Sides of Rivers, are in Summer Floods considerably injured. If they are flooded before Mowing, the Grass is sanded, and not fit for Cattle; nor if they should be mowed when the flood comes down upon them, the Grass is spoiled in a great measure, or perhaps carried off the Land, and the Produce of the Ground and the Farmer's Labour and Expence all lost together.

In *England*, the Legislature has provided, that upon Complaint made, that Rivers and Water-Courses are choaked up and obstructed, there should issue out of Chancery a Commission of Sewers, to oblige the Proprietors of the Lands adjoining to clear and scour the Channels, by distributing their respective Quota's.

Had the same Provision been made in *Ireland*, it would not be in the Power of one Man, by his Neglect or Obstinacy, to defeat the Industry of all others concern'd, and obstruct the publick Good. Whereas at present we see few Attempts to clear and widen Rivers, and none made at the common Charge of the Parties interested. The Inability of some, the Perverseness of others, and the Difference of their Tenures prevent the common Good; every one shifts for himself, and all suffer.

If a Survey were taken of the Lands in this Kingdom, which are yearly overflow'd, they would amount to several hundred thousand Acres. Large Rivers spread far and near over immense Tracts of Land and even the smallest in low and level Grounds, do considerable Mischief; to enhance the Evil, 'tis our richest and fattest Soils which are the most exposed in this Case, and consequently most injur'd.

'Tis to be hoped that the Legislature of this Kingdom, may at some proper Time take this Subject into Consideration. In the mean while, we shall instruct our Reader how he may secure himself, independently of the Concurrence of his Neighbours, and prevent the many Mischiefs which attend these Inundations.

The Remedy is here the same with the one prescribed already, against the Encroachments of the Sea; sloping Banks are the best Security against Inundations of all Kinds; and allowing something for the different Weight of Water, Violence of Waves, the same Method is required to confine a River, and to exclude the Sea. However, as it is not every one who has sufficient Skill to make such Allowances exactly, we shall choose rather to repeat some Things in our former Paper, than to leave the Reader at a Loss, and expose him to the Danger of making his Banks either weak and insufficient, or too large and too expensive.

To avoid both Extremes, make your Trench six Feet over, and five Feet deep; your Bank at the Distance of one Foot and a half from the Trench, four Feet high. Its longest Slope towards the River of ten Feet, and that towards the Trench of six; and let the Top of the Bank be a Foot and a half wide. A Bank of this Form and these Dimensions will bear up against most Floods, few Rivers rising higher than two or three Feet above their Level; but should any swell beyond it, make your Bank in the same Form, but proportionably higher, always one Foot above the greatest Flood. These Banks as well as those against the Sea should be sown with Grass-Seeds, which is much preferable to sodding, and what Sods you raise in breaking up the Ground for the Trench may be usefully disposed of in making the inside Breast of this Bank.

The material Point in erecting Banks against a River, is to make them at a proper Distance from the Channel. When a River is too much confined it swells considerably upon a Flood, requires Banks of more Height and Strength, and often carries all before it; whereas if you leave a Space between the Banks and River, the Waters spread, and seldom rise two or three Feet above their Level. Fifty, eighty, or an hundred Feet, and in some Cases so many Yards, according to the Largeness of the River, must be left open for that Purpose. By these Means great Floods will have full Liberty to pass, without bearing hard upon the Banks; whereas if they are pent up within a narrow Compass, they must swell to a great Height, and endanger the tearing and breaking down the Banks.

This is the Practice in the Isle of Ely, where it is common to see great Banks distant one or two hundred Yards on each side from the Channel of the River, and when they are so made they are always safe; but where the Distance between the Banks is narrow,

there and there only the Banks are in Danger of being broke down, and the Country overflowed.

The Space of Ground that is left between the Banks and the River, will be far from being lost; in the dry Seasons of the Year it will afford good grasing, and in the Part of it near the Banks you may plant Sallies, Oziers, or other Aquaticks, which, besides the Profit arising from them, will be of use to shelter the Banks from Storms and Floods; but beware of planting them upon the Banks, lest the Winds spoil and tear them, by shaking the Trees and loosening their Roots.

In every Improvement the Expence should be particularly considered; we shall therefore observe, that the Charge of making Banks in this Method is very small. In low Grounds the Soil is soft and dug with ease; the Work may be all done with the Spade and Shovel, without Pickaxes, which must be used in upland Ground; and the Materials are on the Spot, and at your Hand. So that it is reasonable to believe, that in a Country where Labour is so cheap, it will not cost above eighteen Pence, or at most two Shillings a Perch to make these Banks, and in some Places perhaps much less. If this Estimation holds good, a Bank of a Quarter of a Mile long, which is eighty Perches in Length, will cost but six or eight Pounds; and as the Ground inclosed by such a Bank must contain a good many Acres, by laying out so small a Sum, you may gain the very first Year double the Value in the Improvement of your Grass and Safety of your Meadows; and in succeeding Years much more, and be out of all Danger for the future of having your Lands overflowed and spoiled. Farmers have frequently sustained more Damage from the Hay destroyed in one Season by Floods, than it would have cost them to enclose and bank their Meadows, and free them from all hazards. P.

N^o. XVIII. *Tuesday, May 3d, 1737.*

THIS Paper is designed as a Supplement to those already publish'd on the manner of banking in low Grounds, and contains more particular Instructions on some Points, not sufficiently explained before, and additional Directions on other Points of less Importance, which have not yet been mentioned. By these Means a good many Things, useful to be known, which could not find room in the former Essays without breaking the Connexion, will be collected into this; and we hope the Reader will, upon that Account, excuse the want of Order, which naturally attends a Collection of this Kind.

We think it necessary to begin by observing, that the Dimensions of Banks in general cannot be ascertain'd; those we have assign'd are sufficient in common Cases, and for that Reason only have been made use of in our Directions. Both Tides and Floods rise to different Heights above the level in different Places, and in different Circumstances; and therefore 'tis from Observations only, and those made upon the Spot, that the true Dimensions of particular Banks can be determined; we can only remind the Reader, that in this Case above all others, 'tis better erring on the safest Side, and incurring a little needless Expence, than run the Hazard of the whole Improvement.

We have directed him to raise his Banks a Foot above the highest Tide or Flood; and to dig his Trenches so large, as to supply Soil enough for the Banks. We shall add here, that in estimating these, he must take into his Account the extraordinary Effects of Storms, and other Accidents, since it is certainly more prudent to guard, even at some Cost, against an Evil that may never happen, than to neglect any one that may.

The Improver in this way is advised, in our former Paper, to leave a Space of a Foot and half, or two Feet, between the Bank and the Trench or Ditch; the Reason is, that when the Banks are made close upon the Edge of the Trench, the Sides of it are apt to crumble and fall down, from the Weight of the Bank resting upon them; and when they do, the Bank itself comes down along with them, and is not without much Difficulty and Expence repaired: Whereas by placing the Foot of the Bank at about two Feet Distance from the Edge of the Trench, you avoid these Inconveniencies; should the Sides of the Trench fall in by any Accident, the Bank is however out of Danger, or should a Part of the Bank be injured any way, the Soil brought down on this vacant Space is readily thrown on again.

The proper Time for making Banks is the Spring, or very Beginning of Summer. You have little Disturbance to fear from Floods at that Season of the Year, and the Grass-Seeds sown upon the Banks will then thrive best and soonest. We have directed the Reader how to prepare his Banks for Hay or Grass-Seeds: we shall now add, that he ought to do this as he goes on, and dress and sow his Slopes by Degrees, and as soon as he finishes them.

Besides the Inundations from the Sea, and from Rivers, low Lands are often injured, and covered with Waters, which fall upon them from upper Grounds; to get clear of them, take the following Method: Draw Drains along the Edges of the upper Ground, from End to End, to intercept the upland Waters, which may be afterwards discharg'd by other Drains, carried on to the next River. The Earth thrown up out of these Drains will make a Bank towards the flat low Grounds, which must be high enough to confine the Water in the Drain, and prevent its overflowing.

By the Help of these Directions, in every Situation, you may keep your low flat Ground free from all
foreign

foreign Water, and leave none to lye upon it, but what falls directly from the Heavens. 'Tis seldom found that any Land is prejudiced barely by the Rain that falls upon it; all Damage from Water arises from that which flows from other Ground; however, when these low Lands are secured from Floods and upland Waters, if at any Time great Rains should fall upon them, the Trenches made within side the Banks, according to our Directions, and those which are always made to divide them into Parks, will drain off most of the superfluous Water; or should too much remain after all this, it may be discharged by a small Sluice a Foot wide, placed in the lowest Part of the Ground near the River.

Notwithstanding the Instructions given in this and former Papers, to preserve Land from Inundations, we are fully satisfied that all Inundations are not hurtful. It is certain that Floods enrich all Lands by the Sediment they leave behind them, and 'tis only when they lye too long and chill the Ground that they become injurious; 'tis therefore as necessary sometimes to admit them, as at other times to exclude them, and to put it in the Farmer's Power to do either, is the chief Aim of these Directions. For this Purpose 'tis first necessary to shut them out, and when that is done, you may let them in and out at Pleasure for the future. To that end, fix one Sluice in that Part of the Bank where the River first comes on your Land, and another in that Part where the River leaves it. The first to let in, and the other to discharge the Water.

When the Farmer can thus command the Flood, and make it subservient to his Profit, he has a constant Manure at hand, which will soon reward his Labour and Expence. However, he must manage it with Caution. The Winter is the only Season for flooding low Lands; and the Beginning of a Flood the best Time. 'Tis then foul and muddy, and as it fines deposits a rich Slime, which improves the
Ground

Ground beyond any Manure whatever ; when that is done, the Water will soon clear, and then is the Time to discharge it ; if a Flood lyes long upon the Ground it will chill and spoil the Grass ; but if it lyes two or three Days only, it will enrich the Soil without doing any Damage.

Before we conclude this Subject we shall take Notice of a particular Case which often happens, and therefore deserves to have a few Words bestowed upon it. 'Tis frequent that a Mill-race runs through low Grounds, and by lying higher than the Land on either Side, and flowing a-crofs the Fall of it, obstructs the Inland Waters which fall on the upper Side of the Land, and prevents their Passage to the lower, where they might be discharged. In this Case you may easily get rid of the Water so kept in, if you make a Cut a-crofs the Mill-race, and fix a Trunk of Wood a Foot square, well pitch'd in the Bottom of the Channel from Side to Side ; the Inland Water will enter the Mouth of the Trunk on one Side, pass thorough it under the Mill-race, and be discharged on the other Side of it, where the Land is supposed to lye lower ; and by the same Method of conveying Water through a Wooden Pipe, under the Channel of a River lying in its way, many Parcels of Ground, otherwise irreclaimable, may be drained with ease.

Having now finish'd our Directions for securing all low Grounds from Water, and keeping them dry, in a manner the most effectual and least expensive, and liable to little or no Damage or Repairs ; we shall, before we dismiss this Subject, take the Liberty of recommending this Improvement in the strongest Terms to our Countrymen. There are many thousand Acres in this Kingdom, which on every Flood are covered with Water, and so injured as to be of little Use to the Owners, all which by the Method beforementioned, may with ease be converted into the richest Meadows and Pastures. This is more wanted, and more necessary to be done in *Ireland* than

than in other Countries ; for though our Lands throw up much Grass, and we have great Plenty of it in Summer ; yet so it is, that for want of Fodder, the Cattle of the Poor perish miserably in the Winter and Spring ; they trust to, and depend on the Mildness of the Seasons ; but whenever Snows continue any Time upon the Ground, or when the Winter proves cold and wet, or the Spring cold and dry, all their Cattle starve, and a great many are lost, to the utter ruin of the poor People ; as they have no Fodder of their own, no Money to purchase it if it could be had, and in many Places none to buy if they had Money, 'tis no wonder to see our poor Cottagers reduced to Beggary by the Loss of their Cows (the chief and almost only Support of their Families) who die for want of a little Fodder. This alone is an Evil which common Humanity should engage us, if possible, to remedy. But it extends much farther, and affects every Branch of our Husbandry ; the Horses that labour our Ground are in the Spring so weak and emaciated for want of proper Food, that they either are not able to work at all, whereby the Tillage must be wholly neglected, or if they do, 'tis with so little Strength, that their Work is very meanly and slightly performed ; besides, most of them die in that poor Service. Add to this, that great Numbers of black Cattle and Horses are lost in Sloughs, Bogs and other dangerous Bottoms, by attempting in the Spring to get a little Grass.

This is the present miserable Condition of most of our Country People, and must be so till we lay hold of the easy Remedy prescribed in these Papers. If the low Lands, which are dispersed throughout all Parts of the Kingdom, and amount at least to an hundred thousand Acres, were banked in and secured from Water, in the Manner-before-mentioned, they would in a short Time all become rich Meadows, and not only supply sufficient Fodder for all our Cows and Horses the Year round, and keep them in good
Plight

Plight for Labour and all other Uses, but besides Stall-feed dry Cattle for Winter, with which we are so ill provided at present.

The People of *England* have, of late Years much increased their upland Meadows, by sowing their Lands with foreign Grass-Seeds; but this is attended with a considerable Expence at first, and a constant Charge afterwards; we have it in our Power, at a trifling Charge, to make a vast Addition to our low Meadows, and keep them in good order without any farther Trouble.

We flatter ourselves with the Hopes of seeing, within the Space of eight or ten Years, all our low Grounds reclaimed, and brought into the Form of fine Meadows, and planted round with Trees proper for the Soil, which would be an Ornament to the Country, and at the same time a great Benefit to the Owners; and we have the greater Reason to expect this Improvement, since it is in the Power of every one who has such low Ground in his Possession, to inclose and secure his own Land, though his Neighbours should neglect theirs; and this at an inconsiderable Expence, perhaps not more than that of making common Ditches of six Feet wide and five Feet deep in upland Ground. And whoever shall first begin to put this Method in Practice will not only receive an immediate Benefit by his Improvement, but will have an advanced Price for his Meadows, which are always of greater Value in Proportion, as they are scarce and in small Quantity.

P.

Nº. XIX. *Tuesday, May 10th, 1737.*

MANY of our Readers will undoubtedly be surprized, upon Perusal of this Letter. 'Tis an extraordinary Attempt to raise good Hops in Bogs; and especially in that Kind which our ingenious Correspondent mentions; but as there was a Time in which

which the most common Things were new, it can be no Objection to this Method of Improvement, that it is a Novelty. On the contrary, since it has succeeded with the Author of this Letter, and the Usefulness of it is thereby out of Question, we have Reason to hope it will be doubly welcome to the Curious, as a valuable and a new Discovery.

GENTLEMEN,

AS I believe your Invitations to a general Correspondence were more than mere Formality, I have Reason to hope for your favourable Acceptance of the following Hints. They relate to a Subject of great Importance in this Kingdom, and are grounded not upon Conjectures, or the Information of others, but on my own Experience.

It must be Matter of Concern to all, to see great Tracts of Land lye entirely usefess in a Country, which has the utmost Reason to husband all Advantages with Care. Such are the many and extensive Bogs to be met with every where, which, except a poor coarse Pasture on the better Kinds, afford no other Profit to the Owner, than what can be made by burning the Soil of them in Turf. I hope therefore it will be an Attempt agreeable to Gentlemen of your publick Spirit, to introduce a Culture of them, which at a small Expence will turn to great Account, and to make those unprofitable Lands, without much Labour in reclaiming them, bear a good and valuable Crop. The Crop I mean is Hops; and the Bogs in which I have reared them with most Success, the worst and most usefess of all others—the red Bogs. The Profit has for many Years fully answered my Expence, and what has turned to my Advantage will do so with every body else in the same Method of Improvement,

Few are so far Strangers in this Matter as not to know, that among the several Kinds of Bogs,

the

' the red are deservedly esteemed the worst. Black-
 ' Bogs yield some Kind of Pasture of a finer or a
 ' coarser Grass, according to the Nature of the Bog.
 ' They are besides more easily reclaimable, and if the
 ' upper Surface be skimmed off and the Sods burnt,
 ' they afford their own Manure a large Quantity of
 ' red heavy Ashes strongly impregnated with Salts;
 ' whereas the Red-bog has none of these good Qua-
 ' lities; it has a spongy, light, fungous, variegated
 ' Surface, bears no Grass, and when you come to burn
 ' it yields but very little Ashes, and even those white,
 ' fleaky, light, and insipid. This is so well known,
 ' that these Bogs are never charged with Rent, but
 ' thrown into the Survey of Farms as unprofitable
 ' Lands. I have indeed reclaimed some of this Kind
 ' of Bog in a different Manner, and for other Pur-
 ' poses than for Hops, and therefore cannot join in
 ' calling them unprofitable; but since they are gene-
 ' rally so esteemed, and accordingly neglected, it will
 ' be of equal Service to my Country, to promote the
 ' Culture of them under Hops, as if they were real-
 ' ly so.

' As one Letter cannot contain all I have to say
 ' upon this Subject, you'll give me Leave, Gentle-
 ' men, to confine myself in this to the Manner of
 ' laying out the Ground, and to reserve the Planting
 ' of the Hops for the Subject of a second. Should I
 ' crowd the Whole into the Compass of one Paper,
 ' my Directions could not be particular, as they must
 ' be in Essays of this Kind, to be useful to the Far-
 ' mer. There are in the Execution of any new Im-
 ' provement many little Circumstances which alle-
 ' viate the Labour and lessen the Expence, and tho'
 ' they may appear trifling upon Paper, they are how-
 ' ever of considerable Importance in Practice: These
 ' I shall take Leave to observe as I go on, being less
 ' concerned for Elegance and Neatness in a Perform-
 ' ance of this Kind than for the Ease and Advantage
 ' of the Husbandman.

' Round

Round the Spot intended for your Hop-yard dig a Trench seven or eight Feet wide to drain off the Water ; give it all the Depth the Fall of your Bog will bear, and if you cut it into the Gravel 'tis the better ; make your Trenches strait and every where of an equal Breadth ; to that End lay them out and mark them by the Line. The Score or Mark is made in Uplands with the Spade, but in Bogs a Hay-knife is much better.—One Man will cut faster with this Instrument than five Men in the common Way.

When that is done, take off the first or upper Sods of your intended Trench with the Spade, but beware of cutting your Sods too large ; they are then inconvenient for Carriage and increase the Labour of removing them. Make them of that Size that they may be easily turned up and thrown with Pitchforks on a Wheel-barrow ; you may then at a small Expence convey them where they may be useful. The proper Use of them is to fill the adjacent Bog-holes, and level the uneven Places of your Bog. However, it will be necessary to reserve a few of them for facing your Ditch in the same Way as you do upland Ditches.

When the first Sod is pared off, proceed to dig your Trench with Slanes. The Soil thrown up will be as good Turf as any other and defray the Expence of Trenching ; and this I desire may be understood as a general Direction, and applied wherever a Trench or Hole of any Size is to be cut out in a Bog. By this Means the Charge of digging is made up to the Farmer in good Turf, and the Labour pays itself.

In cutting your Trench be careful to leave a Gun on each Side of your Plot: This is a Piece of Bog uncut, designed as a Passage in and out, with a Channel for the Water bored in it ; it must be nine or ten Feet wide, and the arched Channel under it of sufficient Height and Breadth to let the Water through.

‘ through. In short, a Gun is a natural Bridge, and
 ‘ must have the same Qualities, Strength in the Arch
 ‘ to afford a safe Passage over, and Wideness equal
 ‘ to the Discharge of Water. Two Men with Spades
 ‘ or Shovels thrusting from each Side till their Tools
 ‘ meet, will make one in a little Time.

‘ There is another Circumstance to be observed in
 ‘ the making of your Trench: At the lowest Part of
 ‘ it where the Water is discharged, leave a Bank of
 ‘ two Feet high uncut, to keep it to that Height in
 ‘ the whole surrounding Drain. By this Means you
 ‘ have a Reservoir at Hand for the Use of your Hop-
 ‘ yard; which, whenever a dry Summer happens,
 ‘ will require to be well watered; and besides a ready
 ‘ and cheap Manure from the Sludge or Mud which
 ‘ will lodge at the Bottom of your Trench when the
 ‘ Current is checked by this little Bank. Some in-
 ‘ deed may fear that the inclosed Ground may suffer
 ‘ by this Method, and be kept too moist by the
 ‘ Water about it; but this I am by long Experience
 ‘ satisfied is a groundless Apprehension. The flow-
 ‘ ing Water, with a fair Vent before it, has little late-
 ‘ ral Pressure, but directs its Way where it has the
 ‘ freest Passage. I have made large Drains in a Bog
 ‘ and kept them full of Water within a Foot of the
 ‘ Brim, and found no Inconveniencies attending it.

‘ When your surrounding Trench is finished at
 ‘ four Feet Distance from the inner Edge of it and
 ‘ exactly parallel, draw another inside Trench of two
 ‘ Feet wide and two Feet deep; let it be drawn like
 ‘ the former round the Ground and by the Line,
 ‘ then fill it up with proper Soil and plant Sallies in
 ‘ it, or any other Aquaticks fit for Poles. They
 ‘ will thrive here exceedingly, and with proper Care,
 ‘ in six Years Time be ready for the Use of the Hop-
 ‘ Yard. The Earth about them is kept moist by the
 ‘ Bog about it, and their Roots preserved from
 ‘ Frosts and Winds by the Distance of their Stand
 ‘ from the Edge of the main Drain; and therefore

‘ no-

' nothing can prevent their Growth : To forward it
 ' as much as possible, two Cautions should be used.
 ' The first to strip off the Side-Shoots when tender, to
 ' prevent their running out into strong Branches,
 ' which impair the Body of the Tree ; the second to
 ' throw up the Mud out of your Trench upon their
 ' Roots, and that Way to supply them with fresh
 ' Nourishment. This should be done when your
 ' Sallies are two Years old ; at that Time, and in the
 ' Heat of Summer, cut the little Bank which keeps
 ' up the Water in your Trench, and leave the Drain
 ' entirely dry ; the Mud at Bottom will grow stiff
 ' and be easily thrown up, and your Trees manured
 ' at very little Charge. *I am, &c.*

A.

N^o. XX. *Tuesday, May 17th, 1737.*

THIS Letter contains the Remainder of our in-
 genious Correspondent's Directions for raising
 Hops in Red Bogs, and will, we doubt not, be ac-
 ceptable to the Reader.

GENTLEMEN,

' **Y**OU'LL give me Leave to proceed in my
 ' Instructions on Bog-Hops without Intro-
 ' duction or Apology, and to address myself directly
 ' to the Farmer.

' When you have prepared and inclosed your Bog
 ' in the Manner described in my former Letter, at
 ' fifteen or twenty Feet Distance from the Sally-
 ' Trench stretch a Line parallel to any one Side of
 ' your Inclosure. To this Line tie Rags or Feathers
 ' nine Feet asunder from each other ; and when your
 ' Line is stretched upon the Ground, at every Mark
 ' or Feather drive a sharp Stick into the Bog to deter-
 ' mine the Centre of your Hop-hills. Having fi-
 ' nished your first Row, remove your Line to nine

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G

' Feet

Feet Distance and mark out a second; from that
 proceed to a third Row, and so on untill you have
 finished the whole Plot. The Ground being thus
 set out, and the Centres of your Hop-hills regularly
 disposed at nine Feet Distance from each other,
 your first Work will be to dig a Hole at every
 Centre, three Feet wide and three Feet deep; to
 lay the upper Sods of it in the Hollows of your Bog
 and to make Turf of the remaining Soil. If you
 proceed in your Work that Summer, your Turf
 must be wheeled off immediately, spread and made
 upon other Ground, otherwise it would prevent the
 Passage of the Tumbrils which you have Occasion
 for in your next Business. This is to fill your
 Holes with proper Earths or Composts in order
 to receive the Hop-sets, which are to be planted
 here, and afterwards managed in the same Method
 as in other Places. To do this, it is obvious that
 much Earth will be wanted in a Plantation of any
 considerable Size; and how to provide himself
 with a sufficient Quantity at a cheap Rate is of
 great Importance to the Farmer. My Method is
 as follows. In the Upland nearest to the Bog, I
 take off the Swerd of a small Plot with the Hoe or
 winged Plough: I burn it, and by thorough Plough-
 ing mix the Ashes with the Mould. To these I add
 a little Lime, rotten Dung or rich Garden Mould,
 and throw the whole together into Heaps where it
 heats and rots, and in a little Time affords the
 richest Compost and the best Soil for Hops. I have
 made artificial Earths in this Manner not only for
 the present Purpose, but in other Improvements
 also, and found it, upon Trial, a great deal less ex-
 pensive than it appears at the first View. The
 Carriage of them to the Bog is the heaviest Article
 in the Expence, and this also is much alleviated by
 the Breadth of the Alleys and the Method of plant-
 ing the Hops in Holes. As the tough Surface of
 your Bog is no where broken, but in the very Spots
 where

where the Hops are planted, it affords a safe Passage for your Cattle; and as your Walks are six Feet wide, the Hills being but three Feet over and the Centres nine Feet distant, you may make use of Cars and Tumbrils, a cheap and commodious Carriage.

I own, that notwithstanding these Precautions, this Improvement is expensive; but raising Hops in any Ground is so, and, I am sure, greater in the most favourable upland Situation than in Bog. A very little Arithmetick will shew that ditching and inclosing, which in Bog is no Expence, the Turf made at the same Time being equal to the Charge; that ploughing, harrowing, fallowing, and digging, which in my Method are intirely saved, with the additional Articles of dunging, hoeing, and paring the Alleys in Uplands, are more than an equivalent for all the Labour and Expence attendant on Bog-hops; and from fifteen Years Experience, I can venture to affirm, that the Produce from the latter is as great in Quantity, and in Quality as good. Many Reasons might be given why it should be so; some of them I beg Leave to lay before your Readers. They may be necessary to remove the Prejudices which generally attend new Projects, and to make this Improvement as common in this Kingdom, as I am sure it will be beneficial whenever it becomes so.

Were it peculiar to my Method I should reckon it the first Advantage of it, that the Hills stand at nine Feet Distance; but as this may be imitated in Uplands, I shall only say in general, that nothing is more prejudicial to Hops than close planting.

The Care taken in Uplands to hoe and pare the Alleys sufficiently shews that it is esteemed a Disadvantage to have any Quantity of Grass growing among Hops: Red Bogs are by their Nature free from this Inconvenience, and, at least for many Years till the Surface is intirely altered, throw up

‘ none or very little. How far Planters are right in
 ‘ their Opinion, that a Coat of Grass impairs the Ac-
 ‘ tion of the Sun upon the Fruit I shall not here exa-
 ‘ mine, but while that Opinion holds it will ever be
 ‘ a Reason in Favour of *Red-bogs*.

‘ Watering Hop Grounds in dry Seasons, tho’ from
 ‘ the great Expence attending it too frequently ne-
 ‘ glected, is certainly of great Benefit to the Crop.
 ‘ This may be done in Bogs with great Conveniency
 ‘ and little Charge. The surrounding Drain is a
 ‘ constant Reservoir where the Planter may be readily
 ‘ supplied, and whoever understands the Culture and
 ‘ the Growth of Hops, will reckon this no small
 ‘ Encouragement.

‘ ’Tis agreed among Hop-Planters that low
 ‘ Grounds have great Advantages, they are little ex-
 ‘ posed to Droughts, and sheltered by their Situa-
 ‘ tion from destructive Storms. Bogs enjoy those in-
 ‘ common with the rest, besides, as long Experience
 ‘ has informed me, some peculiar to themselves.
 ‘ They don’t suffer so much as other Flats by the
 ‘ Rains of a wet Season or the Mildews of a dry one.
 ‘ Whether their Spunginess affords a Passage to the
 ‘ Waters which lodge in other Grounds, and their
 ‘ constant Moisture prevents the bad Effects of too
 ‘ much Heat, I shall not now examine; but the Fact
 ‘ itself is certain, they are free from the Inconveni-
 ‘ encies above-mentioned, and, what is more re-
 ‘ markable, from those Swarms of Insects which too
 ‘ often infest our upland Hops.

‘ I must add that in this Kind of Planting, the top
 ‘ Roots have Liberty to shoot as far as Nature de-
 ‘ signed they should: They have three Feet of the
 ‘ richest Soil to go thro’ before they run into the
 ‘ Bog, and even there, when once it is well drained,
 ‘ they’ll meet with better Juices than in a cold stiff
 ‘ Clay or a sharp sour Gravel, which are the common
 ‘ upland Bottoms.

‘ I shall conclude by obviating a Doubt which
 ‘ might perhaps occur to some of your Readers ;
 ‘ Poles will stand in these Bogs as firm as in upland
 ‘ Ground. The Earth laid into the Holes pressed to-
 ‘ gether, and confined by the tough stringy Substance
 ‘ of the Bog, will sufficiently support them, and they
 ‘ need be sunk no deeper than Improvers direct in
 ‘ other Hop-Yards.

‘ You may observe, Gentlemen, that I have en-
 ‘ gaged no farther in Hop-Husbandry than to ex-
 ‘ plain what was peculiar to my Method. The in-
 ‘ genious Treatise published on that Subject, under
 ‘ your own Inspection, will inform the Reader in the
 ‘ general Management of them ; and to that I must
 ‘ refer him till you are pleased to resume a Subject
 ‘ which deserves your second Thoughts as well as
 ‘ any other. When you do, I shall beg Leave to
 ‘ throw in my Mite, and send you some Observations
 ‘ I have made upon the usual Culture of them.

I am, &c. A.

We cannot dismiss the Reader without observing to him, that it were to be wished many Gentlemen would employ their leisure Hours in the Country, in the Way of our ingenious Correspondent in making Experiments and attempting new Improvements. That in which he has succeeded was certainly as unpromising as any other, and affords Encouragement to explore more of those untrodden Paths which we find lead to private Profit and to publick Wealth. Black-Bogs promise better than the red, and since these turn to so good Account, why should we not try the other ? Or if we are unwilling to run Hazards, let us at least improve where we may do it with more Safety. We do not want good Land to employ our Industry upon, and if so much can be made out of the worst, what may not be expected from the best ?

N^o. XXX. Tuesday, May 24th, 1737.

WE have thrown together in one View what is most material to be observed in making Roads, in Compliance with the Request of several Gentlemen who have applied to us for our Directions on that Subject, and we choose to publish them at this Time, because it is the proper Season for carrying on Works of that Kind.

Gravels make the most commodious and easy Roads for Travellers and Carriages, and are greatly preferable to Causeways and Pavements, which are at best very inconvenient, and when broken up, as they are apt to be, vexatious and dangerous to all who use them.

Our great Roads, made in Pursuance of the Turnpike Acts, are all gravelled, and as every Body knows the finest Roads in *Europe*. Those more distant from the Metropolis, and the bye and cross Roads which now require our Care and Attention, should be made in the same Manner; what this is, is at present pretty well understood in those Parts where the Turnpikes have taken place, and to make the same Method universal is the Design of this Paper.

The most necessary Directions are as follow.

The great Art in this Affair is to make the Roads close and firm, with an easy Fall from the Centre to the Sides. Water, which is of great Detriment to Roads, cannot lodge upon them when they are thrown into that Shape, much less soak in and enter them; and if the Surface be close and the Foundation firm, Carriages will not break them: Gravel answers all those Purposes; it binds into a strong close Surface, by its grosser Parts affords a good Foundation, and may with Ease be formed into a proper Shape. 'Tis therefore our own Fault if we want good Roads, since we find Gravel in all Parts of the Kingdom at a convenient Distance.

But

But to be more particular.

If you are to repair an old Road, before you begin your Work examine well the natural Bottom of it, if you find it hard and firm, you have nothing more to do than to take off all the loose Mould and Rubbish that lyes on the Surface, and throw it entirely off the Road; and if there are Inequalities in the Bottom to take them away, and then lay your Gravel to a sufficient Depth and Breadth; but if the Bottom be soft, sloughy, or such as will easily break up, you must besides put a Layer of Stones in all such Places, to make a good Foundation before you bring on your Gravel; where Stones are plenty they will do well every where under the Gravel; but however scarce they may be, you must at least get as many of them as will cover all the soft hollow Bottoms.

These soft yielding Bottoms excepted, you may save yourself the Expence of Stones where your Gravel is very good, but lay it thick enough: Good Gravel will always make good Roads; without it, 'tis exceeding difficult; and unless you can procure a small Quantity, at least, for the outward Coat, perhaps impracticable; but when you have any, tho' but little, you may succeed tolerably thus; make a Layer of Stones for your Foundation, cover this with the indifferent Gravel you have at Hand, for Gravel of some Kind or other is always to be had in this Country, and reserve your good Gravel for the Surface. Indifferent Gravel is that which contains too great a Mixture of Clay, Sand, or Mould; and whenever you meet with such, you must procure a Covering of better, tho' it were but an Inch, at any Labour or at any Distance.

In laying Gravel on the Road, it is more advisable to lay it on at two several Times than all at once, if any Hollows should appear after the first Coat, they will be easily filled up by the second, and both will cement well together. The Gravel should be spread immediately after it is laid down, and all large Stones

raked to the Bottom ; smaller Stones or Pebbles you must rake from the Edges towards the Middle, where they will make that Part of the Road hard and firm which is most made Use of ; all of them, but especially the largest, should be buried in the Gravel, and none left on or near the Surface bigger than an Egg. In forming the Road raise the Gravel higher in the Middle, and give a due Fall or Slope to each Side ; if the Fall be too little, Water will not readily fall off, and if it be too great, it will be uneasy and dangerous to the Rider. An Inch Fall to a Foot Slope is generally sufficient, and by that Rule, if the Gravel spreads twelve Feet wide, and consequently six Feet on either Side, the Middle must be raised six Inches higher than the Edges : This has been thought too much by some, but there is in Reality more Reason to Fear it is too little, considering that the Middle of the Road is most used, and is every Day worn down and brought nearer to the Level of the Edges.

It has been hinted already, but very well worth insisting on, that when you repair old Roads you should not by any Means make Use of the soft mouldring Stuff you meet with on the Surface of it, for as that is made up of the Dung of Cattle, Leaves of Trees, loose Sand and Clay, which are always fermenting, it will spew up the Gravel when mixed with it, and spoil the Road in wet Weather.

Large Turnpike Roads require a considerable Depth of Gravel to answer the constant Wear of them ; but other Roads, which are at present principally under our Consideration, may be made good with Gravel from eight to twelve Inches deep in the Middle, and from four to eight in the Edges.

The Breadth of Roads cannot be otherwise determined than by the Use made of them ; if they are near the Metropolis or large Towns, and are much used they ought to be thirty or twenty four Feet wide at least, and the wider they are the better, that the Sun and Air may have more Liberty to keep them dry ;

dry; for the same Reason no Road should be less than twenty Feet wide between Gripe and Gripe; especially where there are Trees or high Hedges on the Sides of the Road which spoil them with their Leaves, and keep them always wet. We find that the gravel'd Parts of most of our Turnpike Roads are from fourteen to twenty four Feet wide, with a grass Verge between the Gravel and the Ditches from four to six Feet wide. But with Respect to bye or cross Roads, and those distant from the Metropolis, we apprehend, that gravelling the Middle from eight to twelve Feet wide will generally be sufficient, leaving a Grass Verge of four to six Feet wide on each Side between the Gravel and the Ditch. The Gravel and Grass Parts together will make the whole Road sufficiently wide, and the latter will serve best in Summer to ride upon.

Finding that what we have to say on this Subject will exceed the ordinary Bounds of our Paper, we shall postpone the Remainder to the next Opportunity.

P.

Nº. XXII. *Tuesday, May 31st, 1737.*

IT is observed that it is easier and less expensive to make a new Road through fresh Ground than to repair an old one; in the latter, you must remove a great deal of foul Stuff that lyes upon it, fill up Hollows, lower what is too high, and in many Places make a stone Foundation before you lay on your Gravel; but in making Roads thorough new Ground you avoid most of this Trouble. There are two several Ways of making them; the first is this, make large Ditches on each Side of the Road, and excepting the first Spit of Earth, which must be carefully kept off, lay the Soil you take out of the Ditches on the Middle of the Road as wide as you intend to lay your Gravel, raising it higher in the Middle than the Edges; then rake it and lay it even, and let it lye so for

for some Months till it becomes hard, without letting any Horses or Carriages go on it, and when it is well settled and dry, lay your Gravel on it; this Method has been found to answer very well, without using any Stones except in hollow Bottoms. The second Way, which succeeds very well, where the Bottom is good and gravelly is this; dig the Ground in the Middle of the Road five or six Inches deep, and as wide as you intend to gravel it; throw away all the Soil you dig up and level it at the Bottom; then fill this hollow Space with good Gravel, and raise it three or four Inches in the Middle, and one Inch at the Edges higher than the Grass on each Side; by this Means the Gravel will be kept in by the Ground on both Sides and make a lasting Road. The last Method has been practised with Success, and where the Bottom is firm and sound, is the readiest and cheapest Method. Where the Gravel is near at Hand, and laid but eight Feet wide, the Charge cannot well exceed one or two Shillings for each Perch.

If Hollows should appear in the Road soon after making, 'tis obvious that it is better they should be filled with Gravel the very first Season; for a small Hollow at first will, by the working and dashing of the Water, become a great Hole in a little Time.

Tho' we have hitherto only mentioned Gravels, because they are the best Materials for making lasting Roads, the coarser Kinds especially, which abound in small Stones or Pebbles, we would not be understood as if we condemned the Use of all other. Rotten Quarry and Slate Stones will break with Ease, crumble and bind well, and make very serviceable Roads.

'Tis of great Consequence that the Ditches on the Sides of the Road should be large enough to receive all the Rain-Water that falls upon it, and that there be proper Passages cut and often cleared, to let it run off; as also, where little Brooks or Currents cross the Road, or the Fall of the Ground requires it, that Sewers or Arches should be made to convey the Water under Ground.

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Roads are best made as early in the Summer as the Weather will allow, they have then the Heat of the whole Season to dry and settle; however, from *September* to *March* they must not be meddled with, those that are so break with the first Rains.

Pavements and Causeways in old Roads make good Foundations for new ones provided the Stones be rais'd, to bind the Gravel together, which is to be laid on them.

Where your Roads are naturally good, and have gravelly binding Bottoms you may keep them so, and improve them at a trifling Expence; 'tis only sloping and sinking them gradually towards the Sides deep enough to carry off all the Rain Water.

These are the best Directions we have been able to collect, and which we have thrown together merely to comply with the Request of several Gentlemen; the Subject is something out of our Way and did not fall immediately within our Observation; but we shall be pleased to have stepped aside a little, if any Good shall arise from it. This Country is naturally wet, and our Roads consequently bad, and therefore some Care should be taken to free us from that Inconvenience; on the other Hand, we have Abundance of the best Materials to mend our Roads, and therefore less Pains will do the Business.

The *Romans* did not think it below the Dignity of the Common-wealth to attend to the Conveniencies arising from good Roads. That great and wise People carried on, at an immense Expence, Roads whose Remains are to this Day the Admiration of the Curious, from the Centre of the Empire to many of the remoter Provinces. The readier March of their Armies was, perhaps, their first Motive, but the easier Intercourse of the several Parts of that great Empire was another, which they had too much Prudence and too much Humanity to overlook. 'Tis in the Eye of Reason, the nobler and the better Motive and sufficient without the other to work upon a generous People.

Of

Of late Years the Wisdom of the Nation has, in some Degree, imitated the *Romans* in this Particular, our great Roads being provided for by Parliament, and the considerable Charge attending them prudently and equitably defray'd by an easy Tax upon the Traveller. But however a great deal is yet undone, and notwithstanding the Provision made by Law, our lesser Roads are still in a bad State from the Obstinacy and Perverseness of some, the Inability and Unskilfulness of others, and the Indolence of all which in different Ways equally defeat the good Intentions of the Legislature.

In other Countries there are publick Officers with great Powers, appointed to inspect the Roads, and force those who are refractory to assist in the Repair of them. This is perhaps not perfectly consistent with the Freedom of our Constitution, and therefore some other Method should be thought of attended with the same Advantages, and not liable to the same Exceptions. The Attendance of Gentlemen of Fortune on the six Day's Labour is an expedient of this Kind, which would certainly produce the desired Effect, without the Appearance of Compulsion, and in a Way least grievous to the People. To encourage Gentlemen to take this Trouble, the many Advantages arising from good Roads to the Country in general, and their Tenants in particular, are certainly sufficient Motives; easy Intercourse and cheap Carriage are considerable Benefits which every generous Mind would be pleas'd to bestow upon his Neighbours. However it may not be improper to remind them of an Advantage which they may think more immediately their own.

The Pleasures of the Country depend greatly upon agreeable Outlets. Without them a Gentleman is confin'd to his House as to a Prison, or must wade to his next Neighbour's through a Sea of Dirt and Mire. Many sumptuous Palaces, and fine Gardens in this Kingdom are like the enchanted Castles in Romances,

mances, out of which there is no Issue, without a Spirit of Knight Errantry to encounter perilous Adventures. To speak seriously, 'tis a whimsical Inconsistency to lay out considerable Sums in beautiful Improvements, and grudge an arrant Trifle to make the Approaches to them pleasant. Were there no such Thing as publick Spirit, this single Reason should engage Gentlemen's Attendance within a Mile or two of their several Seats; and would every one begin from his own as from a Centre, and improve the Roads all round him to that Distance, the whole Kingdom would be parcell'd out among them, and in few Years they would all meet.

Gentlemen have been so long used to pursue a pernicious Way to Interest and Power, and the common People so accustom'd to be courted by destructive Compliances, that perhaps it may be of little Weight to propose new Methods of gaining an Influence in the Country. However we cannot help concluding on this Subject by observing that, whenever it shall be tried, that Interest will prove most lasting, and with a little Constancy, most considerable also which is built upon better Foundations. He who bestows his Pains, and where need is, some Portion of his Fortune to procure the Ease or Advantage of his Neighbours, will in the End meet with suitable Returns, advance his Power in Proportion to his publick Spirit, and create Dependencies as extensive as his Usefulness.

P.

Nº. XXIII. *Tuesday, June 7th, 1737.*

MANY of our Correspondents have applied for the SOCIETY's Directions in making Cyder, which is become of late Years a Business of some Importance, since the Consumption of that agreeable Liquor is considerably encreased already, and every Day encreasing.

In

In compliance with their Request, what we have been able to collect upon that Subject from the Experience of others carefully considered, or from the Analogy of Cyder with other vinous Liquors, shall in this and some following Papers be laid before the Reader to instruct the Ignorant, and to invite the Skillful to communicate their Observations, if any Thing of Moment should occur to them which has escaped our Notice.

This Season of the Year is not fit for planting Orchards, and therefore Directions on that Head would be ill-timed and out of Place. 'Tis indeed a leading Branch in the Business before us, and an Improvement very necessary in this Kingdom, where notwithstanding many large Plantations lately made, our Consumption is still greatly superior to our Stock, and Cyder a considerable Article in our Importations. But it is at the same time a Branch of Business that may wait, and wherein our Instructions would be useless to the Reader for several Months to come; we shall therefore in these Papers address our selves to such as have Orchards ready planted, direct them how to choose and mix their Fruits, and draw from them the most valuable Cyder.

'Tis a hard Matter to prescribe to the Palate, and set Rules to Taste; and therefore the endless Variety of different Flavours to be found in different Kinds of Cyder may be justly reckon'd an Advantage; every Apple has its peculiar Relish, and affords a distinct Juice, strictly and properly its own, tho' included in the common Name of Cyder; which therefore under one general Appellation contains something for every Palate, and leaves Room for the Wantonness of Taste and Fancy. There is however in this as in every other Liquor, a leading Taste, which prevails amongst those who are accounted Judges, and thereby becomes the Standard of its Value; this in Cyder is a strong, rough, vinous Taste, which is now the reigning one, and will probably hold the preference; for
however

however arbitrary the Decisions of the Palate, there are other Qualities of a more fixed and settled Nature which always go together with this Flavour, and give that Kind of Cyder a great Advantage of all others; it keeps well, and improves by Age; it is wholesom as well as pleasant, and has Strength and Spirits to supply the Place of other vinous Liquors. In its highest Degree of Perfection this Cyder is not inferior to the Juice of Grapes, and seems to be bestowed by Nature upon these Northern Countries as a full Equivalent; and if we may believe the Wonders that are told of the Stire Cyder, we have little Reason to complain of our Portion. 'Tis true the Stire is confined to a narrow Compass, and the Apple it is made of loseth something of its Relish in every Soil, besides its native one. But perhaps upon repeated Trials this Antipathy to Transmigration might be conquered; and a Soil found out as kindly to it as its own; or if this should not succeed, 'tis however likely that this Cyder is not single of its Kind, but that among the vast Variety of Apples, and the endless Combinations of them in different Mixtures, something may be found equal to it, and perhaps superior.

'Tis observed that the Kernels of grafted Apples produce new Species, equally different from the Graft and Stock, though partaking something of them both. Hence the Gardiner may every Year create new Kinds, till by some lucky Hit he lights on the Flavour he would choose; or should he fail in that Way, the Mixture of different Juices, in different Proportions, affords him another Method of Trial, which, frequently and prudently repeated, can hardly fail of the desired Success.

There are now in the Southern Parts of *Ireland* a sufficient Number of large Orchards planted with Cyder Fruit, to make Experiments of this Kind practicable; and the late Improvement of our Cyders in those Parts affords great Encouragement to hope that they

they will be successful. It would be an agreeable Amusement to make Trials of this Kind, if nothing more could be expected from them than the pleasure of studying Nature. But with a little Prudence in the Management, 'tis not impossible but they should lead at last to some valuable Discovery. 'Tis hard to tell how much the Cyder of one Acre might be worth, if it were of the best Kind; some in *England* sells upon the Spot for eight or ten Pound a Hoghead, which, at the Rate of ten Hogheads to an Acre, affords the Owner a Return which very few Crops can equal; and this Profit in the End may be the Reward of every Person who will turn his Thoughts that way.

To direct those who are willing to engage in Experiments of this Nature, it may be useful in the Remainder of this Paper to give them a general Notion of what may be expected from the several Kinds of Fruit; particular Instructions on this Head would be needless, and indeed impossible, since the Peculiarities of every Kind of Apple cannot be enumerated; but the chief and leading Characters, common to several Kinds, every Man should know who engages in this Business.

Summer Fruit or sweet Apples afford a weak, pert, windy Juice, agreeable enough to the Palate from its Liveliness and Tartness, but in a great Degree unwholesome. It has no body, and therefore will not keep, and scarcely deserves the Name of Cyder.

The Permain, Red-streak, Nonpareil and Golden Pippin, yield a palatable Liquor, which with something too much Sweetness, has however a delicate, high, racy Taste, and keeps tolerably well. This Cyder is in great Esteem with those whose Palates are not seasoned by the frequent Use of the rougher Kinds; but Criticks do not admit it among the better Sorts, and place it only immediately above the Summer Cyder. 'Tis however probable that it is capable of Improvement, and when thoroughly well made,

made, may obtain among its kindred Liquors the same Rank, which among Wines is assigned to Canary, and the other richer Kinds.

Wildings and harsh winter Apples may be ranged in a third Class; their juice is strong, generous, and vinous, and affords the several Kinds of Cyders which are known by the Name of the Rough Cyders. Among those some retain the Flavour of the Apple, and betray, to a nice Judge, the Fruit from which they were extracted, while others are entirely vinctous, and leave a neat, spirituous, and lively Taste upon the Palate. Hence ariseth a considerable Difference in rough Cyders, which in effect constitutes two different Kinds, both good indeed, but not in the same Degree, the Taste of Fruit upon the Liquor being always reckoned a Defect, and that the most perfect Flavour, which is most neat and disengaged from all Peculiarities whatever.

To attain this should be the Aim of all those who deal in Cyder, and the harshlest, roughest Kinds of Apples afford the best Prospect of Success. Their Juices require indeed to be kept a long Time before they part with their wild, raw, and grating Taste, but when mellowed thoroughly by Age, they make ample Compensation, and become the neatest and the finest Cyders. Of this Kind, the Cuckagee, Burlington-Crab, Kendrick, and Royal-Wilding are the best Fruits hitherto known in *Ireland*; and 'tis from them, either single or mix'd together, that the greatest Improvements in our Cyders must at present be expected. A few Years hence we shall be able to add to these the Stire, Foxwhelp, Woodcock, Whirfoot, and Underleaf, lately propagated here from *England*, and in great Reputation there. In the mean Time 'tis upon the former that Gentlemen should employ their Industry, and make their first Experiments. What Assistance we can give them in determining the Degrees of Ripeness, Sweating, and Fermentation requisite, or in explaining the best Methods of pressing, curing,

curing, racking, and keeping Cyders, they shall find in the following Papers.

This we shall conclude by a Caution of great Moment to those who are willing to try what may be done by Mixtures.

'Tis usual in this Case to mix the Apples before grinding; but the Mixture of the Juices drawn singly from every Kind is certainly more advisable. The peculiar Qualities of every Apple are this Way more certainly distinguished, the Proportions more justly ascertained, the Defects of any Composition more readily discovered and corrected, and the whole Work carried on with greater Nicety and more Exactness.

M. P.

No. XXIV. *Tuesday, June 14th, 1737.*

TIS of great Importance in making Cyder that the Fruit be thoroughly ripe. The Juices of raw Apples retain their harsh sour Taste in spite of all Endeavours, and never acquire that racy, mellow Flavour which the Sun only can bestow. Sweating together in a heap will, indeed, give them an artificial Ripeness, but this is no Equivalent to that which they receive from Nature, which admits of some Assistance from the Industry of Man, but can never be completely imitated by Art. This is true, in a lower Degree also of the Mixtures of ripe and unripe Fruit, which never afford good Cyder; the latter spoil the former, and communicate their green raw Taste to the whole Mass.

It should be therefore the first Care of every one, concern'd in making Cyder, to let his Apples hang upon the Tree till they arrive to their Maturity. For this no certain Time can be assign'd; it varies with the Nature of the Fruit, or the Circumstance of the Season; different Apples have different Times of ripening, and the same, according to the Weather, change

change their Times considerably from one Year to another; but Signs there are sufficient to direct the Gardener. The Brownness of the Kernels, their rattling in the Apple, the fragrant Smell of the Fruit itself, and its falling in calm Weather, are certain Indications, which in all Kinds may be depended on. 'Tis however an useful Caution in this, as in every other Case, to err on the right Side, and to let the Apples hang too long rather than too short a Time. Summer Fruit, indeed, will suffer by this Method, grow pulpy, dry, and mealy, and afford little or no Juice; but as the Summer Cyder is a liquor scarce worth making, this is an Exception which hardly deserves our Notice. In every other Case the Rule is good, and in the best Fruits most. The harsher Kinds can hardly hang too long, and daily mend upon the Tree; their Juices mellow, throw off their crude and watery Parts, and consequently as they grow less in Quantity improve proportionably in Quality. 'Tis even probable, that the Necessity of sweating Winter Fruits might be removed, by leaving them upon the Trees somewhat longer than is requisite to ripen them; no Reason hitherto appearing to think, that this Fermentation by sweating serves any other Use than to increase the Degree of Maturity, which the Fruit had acquir'd upon the Tree. 'Tis, indeed, possible that it may answer farther Purposes, and dispose the Fruit to an easier Emission of its Juices. And as our Reasonings upon Nature frequently lose their Way, where Experience does not guide them, 'tis from Trials only that we can form a Judgment to be thoroughly depended on. Recourse must therefore be had to accurate Experiments, which in this Case are easy, and will certainly quit Cost; for which ever Way the Question be determin'd, Something must be found very well worth the knowing. Should Sweating answer some Purpose not to be attain'd upon the Tree, it will, when once discover'd, ascertain the Nature, the Use, and the Degree of Sweating: or should no-

thing of this Kind appear, it will correct a Practice, which, if it does no Good, must certainly do Mischief; since it is evident to common Sense, that if Maturity be all that's wanting, it is more perfectly and more naturally attain'd upon the Tree.

When your Apples are fit for pulling, 'tis essential to choose dry Weather for that Purpose. Water is a bad Ingredient in all vinous Liquors, and should with a peculiar Nicety be guarded from your Fruit. That which adheres to it after Rain or Dew, or even the smaller Quantity of Moisture, which it might contract by falling or lying upon Grass, is sufficient to impoverish your Cyder in a sensible Degree. Gather your Fruit therefore in the driest Day, and in the driest Part of it, when the Dew is thoroughly exhaled, and, if feasible, at a moderate Expence, gather it by the Hand. This Method is, perhaps, impracticable in Plantations of great Extent, and where the Trees are very tall; but wherever it can be used, it is of great Advantage, and certainly quits Cost. You then can choose your Apples, and leave those upon the Tree which are not of a sufficient Ripeness; you save your Fruit from Bruises, and your Trees from the Damage they frequently receive, by violent unskilful shaking.

Where this Method cannot be observ'd, strew the Ground under the Trees with Straw of sufficient Thickness to save the Apples in their Fall, and cover this again with Blankets; then with an easy Motion shake the Boughs successively, removing, at every shaking, the Apples already fallen, that they be not wounded by the next. By these Means all your Apples are kept dry, and for the most Part free from Bruises. With a little additional Care you may also, in this Method, separate the Fruits according to their Ripeness; for if you proceed regularly from Bough to Bough, and give each a gentle Swing, the ripest will fall first, and the unripe remain upon the Tree 'till more violent Motion brings them down. Some

curious

curious Gentlemen have already proceeded in this Method, and carried the Fruit thus gathered directly to the grinding Mills, without any previous Sweating. The Cyder it afforded, as far as we have been informed, was some of the best they ever tasted; and when a greater Number of Experiments shall be made, we doubt not but the Success will evidently prove what we have only hinted before, that Sweating is unnecessary when the Fruit is ripe.

However, as 'tis the safer Way to look upon this as still a Question to be hereafter more leisurely considered, and that, besides, Sweating is there at least of undeniable Advantages, where the Fruit is not full ripe, we shall add some Directions on that Head, that while this Practice is continued it may be so in the best Way.

The material Points to be observ'd are these, That the Fruits be separated according to their different Degrees of Ripeness, and that your Floor be as dry as it is possible. In the first, the more Nicety is us'd the better, and the more the Fruit in every Heap is alike in its Maturity, the sooner the Sweating will be over, and the less Damage will accrue to the best and ripest Apples in the Heap. However, if Care be taken that none be put together very ripe and very green the Injury will not be great; but if this should be neglected, as it is frequently the Case, either your ripe Apples will grow rotten, or your green Fruit be still unripe, and in one or other of those Ways your Cyder considerably spoil'd. Boarded Floors will answer the second Caution best. They are the driest, and therefore preferable to any other. However, Earthen Floors cover'd some Inches deep with wheaten, rye, or oaten Straw, will do tolerably well; but to heap them up in your Orchard, or any where else on Grass, or on an uncover'd Floor, where Rains and Dew have free Access to them, is the ready Way to make your Cyder weak and watery, and frequently besides musty and ill tasted.

Were we thoroughly persuaded that Sweating is of real Benefit, we should advise the Gardener to raise a Store Room near his Orchard, over his Mill and Press which should occupy the lower Floor, where his Apples might be laid to sweat, and thence convey'd into his Mills by a proper and convenient Trunk. As it is we shall only say, that those who will proceed in the old Method, and have large Quantities of Fruit, must be provided in this Manner before they can expect any tolerable Success. The Time of Sweating cannot be determin'd by any other Rule than by the Ripeness of the Fruit. Different Kinds require different Lengths of Time, from eight or ten Days to six Weeks. In general, the harsher the Apple, the more Time it wants; Particulars Experience must determine.

Were it the Gardener's only Business to make the most valuable Cyder, however small the Quantity, we might end these Instructions here; but as it is to him of great Importance to make the most of that Portion of his Fruit which will not afford the best, we shall add a few Directions to that Purpose.

Windfalls, as they are generally call'd, bruise'd Apples, and those which remain untipe upon the Tree, should not be mix'd with your choice Fruit; without this Caution 'tis in vain to expect good Cyder, you may have large Quantities indeed, but always proportionably bad. This Fruit, however, need not be thrown away, that Part of it alone excepted where the Bruise appears black and mouldy, a small Quantity of which will communicate a nauseous and offensive Taste to the whole Mass. The rest will make inferior Kinds of Cyder; and provided you take Care that your Windfalls do not lye too long upon the Ground, and don't expect a keeping Cyder from bruise'd Apples, they will answer tolerably well. To prevent Mistakes it may be necessary to add here, that our Objections against Sweating are absolutely confin'd to the choicest ripest Fruits. Windfalls, and

all Apples that are not perfectly ripe, do undoubtedly require it: Being depriv'd of the natural Maturity, they want an artificial Ripeness, and must borrow that from Art which they can no longer receive in a better Way. *M. P.*

N^o. XXV. *Tuesday, June 21st, 1737.*

THAT we often make very bad Cyder in this Country out of our choicest Fruits, is in a great Measure owing to the Neglect of those Directions which made up the Bulk of our last Paper. Most of those who have large Orchards, and universally all those who make a Trade of buying such, gather their Fruit unripe, and mix their Apples of every Kind together, without the least Regard to their different Degrees of Maturity. They throw ripe and unripe, bruis'd Apples and Windfalls in a Heap, and let them take their Chance in an open Orchard, expos'd to Rain and Dew, or at best on a damp earthen Floor, where they leave them, not till they are fit to grind, but so long only as suits their own Conveniency. In this Way 'tis in vain to expect good Cyder; it will be harsh, raw, and disagreeable, a crude Mixture of undigested Juices, and notwithstanding the little Help it may receive from white Syrups, or any other corrective, bad, and unpleasant after all. This is an Error in the first Concoction, which no ensuing Care can mend, and therefore we must insist upon it, that without a just Regard to the Instructions in our last, all the Pains that can be taken afterwards are plainly thrown away.

We shall therefore proceed in this and the following Paper upon Supposition, that Gentlemen have gathered as much of their Fruit as the Season would allow them in its highest Degree of Maturity; that they have sort'd their Apples, at least the most valuable Kinds, particularly the Stire, Underleaf, Fox-

whelp, and Golden Pippin, which hitherto have not been found to answer well in Mixtures; that their unripe Fruit has lain to sweat upon dry Floors, guarded from all Damps by a good Roof over Head, clean, sweet Straw underneath, and a convenient Interval between them and the Walls on either Hand; that it there has ripened, which the Summer Fruit will generally do in ten Days, Autumn Apples in a Fortnight, the first Winter Apples in a Month, and the latter harsher Kinds in six Weeks or thereabouts; and lastly, that their bruised Fruit, and that which is any Ways red rotten, is separated from the rest to be put single in the Mills. 'Till this is done, 'tis in vain to hope Success; but that great Business over, the rest is easy, and as follows;

Apples that have lain any Time in Heaps are generally cover'd with a clammy Sweat, wipe this off; it is a watery Juice, and impoverishes your Cyder.

When thoroughly dried, reduce your Apples to a Pomice, by pounding or by grinding them. The Method of pounding in a Trough is too well known to require Description; it is a tedious and expensive Way, us'd only by such as have small Orchards; and even those, if they are curious, will soon change it for a better. It performs its Work unequally, and with Waste; much of the Liquor is dash'd out of the Trough, and when some Apples are beaten to a Paste, others are hardly broken.

Grinding is performed by two several Engines. The first resembles a Tanner's Mill, and consists of a circular Trough to contain the Apples, within which a large flat Stone moves round upon its Edge, to grind them. The second grinds the Apples between two Cylinders or Tumblers, both arm'd for that Purpose, with broad iron Teeth or wooden Cogs, which by their Pressure against one another, as the Tumblers Turn, drag down the Apples, and squeeze them to a Pomice. In this Machine the Apples are plac'd in a Hopper, over the Tumblers, from whence they

they fall by their own Weight, and continually supply the Mill. Descriptions in writing are never accurate, and therefore it would be impertinent to detain the Reader by a particular Account of these Machines; they may be seen in twenty Places, and the DUBLIN SOCIETY has Models of them both, which they have ordered to be shewn to every one that calls for them. The Curious may at the same Time inspect a third Machine that works with two Pair of Cyllinders at once, the upper Pair to break, and the lower Pair to grind the Fruit, and thereby in half an Hour acquire a juster Notion of the several Cyder-Mills in Use, than we could convey to them by the most elaborate Description.

Our proper Business, if we had sufficient Information, would be to determine which of these Machines has the Advantage of the rest; but for Want of Trials we can hitherto give only our Conjectures. The Cyllinder Mill certainly works most equally, and if any Purpose can be served by it, may be set to grind either coarser or finer as you please. This is undoubted, that to make Experiments, without which there can be no Improvement, it is greatly superior to the other. By setting the Cyllinders at different Distances, you may grind your Fruit of different Fineness, and if there be, as most probably there is, a Degree of Fineness where it yields most or best, this Engine will discover it. However, as the other Mill makes more Dispatch and grinds the Kernels which meliorate the Flavour of your Cyder, we shan't pretend to give the Preference to either.

When the Apples are ground some carry them directly to the Press, others with more Reason, empty them out of the Trough or Receiver wherein they fall from the Mill into Tubs, or large, wide, shallow Vats: This Work is done with most Ease by broad wooden Shovels; these also serve to turn your Pomice in the Vats five or six Times a Day, to prevent any Fermentation. The whole is intended to give the Po-

mice a red Colour, which heightens that of your Cyder afterwards, and brings it to a deep fine Amber. This Business is over in two Days.

From these Vats your Pomice goes directly to the Presses. Of these there are several Kinds, but all reducible to the two mechanic Powers by which they act, the Lever and the Screw. The Lever presseth the Fruit by a heavy Weight suspended at the End of it. The Screw-Mill consists of a wooden Screw and Nut, generally of Elm wrought by three or four Men forcing it round with Levers, in the Nature of a Capstane. It acts upon the Pomice by squeezing it between two Planks, in the lowermost of which there is a Gutter to carry off the Liquor, 'till it has yielded all its Juice. In both these, that it may not slip from the Pressure, the Pomice, or, as it is then called, the Cheese, is confined in Hair-Bags holding each of them from two to three Bushels, or as much as the Mill can grind at once, and heaped over one another 'till the Press is full. The larger Presses will hold from eight to fifteen Bags, which yield according to the Largeness of the Cheese, from one hundred to two hundred Gallons. Of these Bags, to perform the Work neatly, 'tis necessary to have two Sets, for they clog and fur in pressing, and become unfit for Use 'till they are washed and dried; and while this is doing, either the Press must stand or another Set be ready to employ it.

Instead of Hair-Bags some use long Straw laid under the Pomice, the Ends of which they turn up over it, covering them again with fresh Straw, and that with another Layer of Pomice, 'till they fill the Press. Any of those Ways will do, but those who are desirous to work neatly, generally use the Screw and Bags.

'Tis usual to dispose of all the Liquor pressed out of the Cheeses, the same Way, and without Distinction; but if the Analogy holds between Cyder and other vinous Liquors, this must be a considerable Mistake. There

is a great Difference between the first Yieldings of the Grape and the Juices they afford on farther Pressing, and always to the Advantage of the former, and if the same be true of Cyder, we lose our richest choicest Kinds, by an imprudent Mixture of the whole together. The Trial is easy, and we beg leave to recommend it to our Readers. To make the Experiment as full and accurate as possible, it would be proper to divide the Juices arising from the same Kind of Apples into three distinct Parts. That which comes from the Apples without pressing, that which runs off first from the Press, and that which is forced out last, working and tunning them asunder. The Reason of this Division is taken from the Nature of the Fruit, which, being more watery than Grapes, may probably yield a weaker Juice at first, and the best and strongest only towards the Middle of the Operation. However, the last Juices must certainly be loaded with Dregs, and therefore the least valuable of the three. Some Gentlemen, more curious than ordinary in the Management of Cyder, have given us the Hint of this threefold Division, assuring us from their own Experience, that the first and last Yieldings of the Fruit are vastly inferior to the rest. However, as they are contradicted by some others, who, as it is in Wine, affirm the first Juices to be best, we propose it only as a Query to be resolved by farther Trials, and we hope our Readers will make it their Business in the approaching Cyder Season, to try this and the many other Experiments which we have recommended to their Observation. The Result of them we shall wait for with Impatience, and publish with great Pleasure.

P. M.

No. XXVI. Tuesday, June 28th, 1737.

WHEN the Business of pressing is once over, and the Liquor strained through a Hair-Sieve, separate the coarsest Dregs from it, which is a Prac-

tice

tice every Way advisable, you must leave it for some Time to itself, till it has gone through a necessary Fermentation, and deposited its grosser Lees. To this Purpose some dispose of it immediately in Hogsheds, others in large Tubs or Vats, and the most curious in a Vessel intended for that very Use, fixed upon a Stand or Stilling, provided with a Tap at Bottom, and containing five, ten, or twenty Hogsheds. In these the heavier Lees subside, and the lighter form a Crust at Top, which, by its sinking afterwards, gives you timely Notice that the Ferment is gone off and your Liquor fit for racking. This, therefore, should be closely watched, and upon the first Appearance of its falling, the Cyder, which is then become tolerably fine, drawn off the grosser Lees and tunned into the Hogsheds. The usual Time taken up in this primary Fermentation, is from thirty six to eight and forty Hours, more or less, according to the Weather. Some affirm that they have had good Cyder by tuning it directly from the Press, without any other Caution than leaving room for the Liquor to ferment within the Hoghead, where it remained from first to last; but this Method is liable to many Hazards, and unsuccessful, where it has been so, only in favourable Seasons. The gross Lees are apt to rise on every considerable Change of Weather, and when they do, set the Cyder on the Fret, which should it do no worse, certainly robs it of its Spirit, and when over, leaves it flat and vapid. Besides, 'tis agreed from repeated Trials, that Sourness in all fermented Liquors begins ever at the Lees, and therefore the more of them you leave among your Cyder the more readily it will turn eager.

Supposing therefore that the Cyder has fermented in some of the Vessels above mentioned, it remains to tun and keep it. To this Purpose nothing is more material than the Choice of proper Vessels, Cyder, of all Liquors, being apt to take the Taste or Tang of the Casks most readily. New Vessels, though the
Wood

Wood is ever so well seasoned, generally give a disagreeable Relish to all Liquors, and will do so especially to Cyder, without proper Care before-hand. Frequent scalding with hot Water, into which some Handfuls of Salt have first been thrown, or with Water in which some of your Pomice has been boiled, fumigating with Brimstone, and washing after all with Cyder are the usual Remedies against this Evil, and seldom fail of removing it effectually. Of old Casks, Beer Vessels are the worst; they evermore spoil Cyder, as in Return, Cyder-Casks infallibly spoil Beer. Canary and Brandy Casks do well, and all Wine-Vessels tolerably; and provided the Tartar, adhering to their Sides, be carefully scraped off, and they well scalded, there is no Danger in the Use of them. In scalding them 'tis a Circumstance worth knowing, that boiling a Parcel of dry Wormwood in your Water, and taking a Brush of the same Plant to rub and scour the Sides, corrects the Acid of the Tartar, and is therefore of Advantage. It is also worth observing, that those who advise fumigating with Brimstone confidently affirm that the Cyder is stronger and keeps better where the Vessels have been so prepared, and upon that Account they tun immediately after the Operation and before the Smoke evaporates. To enable, therefore, every one who pleaseth to examine by fair Trials how far this is true in Fact, we here add the neatest Method of Performance. Melt a Penny-worth of Brimstone, and dip a large Piece of new Cloth or of Canvas in it till the Brimstone is all imbibed, and the Cloth or Canvas looks like a Piece of Searcloth, then roll it close, tie it, and with a Wire suspend it at the Bung, three Parts in four within the Vessel; light it, and let it burn till it is ready to fall into the Cask, then remove it and tun without Delay.

We come now to a Point of great Importance and hitherto of as great Uncertainty, which has raised among the Curious a Controversy of long Standing, and not likely to come speedily to a Decision without a

Course

Course of regular Experiments. Some Virtuosi tell you that continued Fermentation and repeated Racking certainly spoil your Cyder; others as confidently say, that without them ye never will have good. Some rack once, some twice, others whenever the Liquor frets. Some look upon the Lees as the Food and Nourishment of Cyder; others as a Cause at Hand, upon every Change of Weather, to set it on the Fret, and turn it sour. Every Man has a System of his own, and a peculiar Practice consequent thereon; and so great is the Variety of Methods, that nothing certain can be drawn from them but this one general Conclusion, that we are still at guess Work, and must be obliged to future Trials for any Rules that can be thoroughly depended on. Our Business, therefore, is to set the several Ways in Use before the Reader, and recommend accurate Experiments to be made on each.

One Method is, to leave the Cyder in the Vats, mentioned in the Beginning of this Paper, some Days longer than is there advised, and 'till it fines in a great Measure, then to run into Hogheads, where it remains without any farther racking. Those who recommend this Practice say their Cyder is the stronger and mellow; and those who object to it reply, that lying on the grosser Lees, which cannot all be fallen in the Vats, it must be apt to fret, turn foul, and in unsettled Weather eager.

'Tis a second and more common Method a Fortnight after running, to rack into other Hogheads; there the Cyder undergoes a second gentle Fermentation, and while it lasts the Bung must be left open; afterwards, when the Ferment lessens, covered only with a wet Cloth or Tyle, and when it is quite over, stoped down close with well tempered Clay, kept moist to prevent its cracking, by a Handful of Bay-Salt strewed over it.

To this second Racking others add a third in *March* or *April*, when the Lees have thoroughly subsided. This again is followed by a little Fermentation, and

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for that Reason chiefly objected to by some who think every Fermentation hurtful that is not strictly necessary.

Others, on the contrary, particularly those in *Devonshire*, where they make the strongest Cyders, who look upon thorough Fermentation as the great Secret to have their Cyder fine, light, and free from Dregs, not only approve that Method, but proceed much farther, and as follows ;

At first tunning they do not fill their Hogheads to the Bung, but leave an empty Space to receive a Pailful of fresh Cyder from the Press. This renews or encreaseth Fermentation, and sets the whole on working with some Violence. The Froth which riseth at the Bung they are careful to skim off, and the Waste of Liquor thus occasioned they constantly supply with unfermented Cyder. By these Means the whole is kept upon the Fret for a considerable Time; and 'tis not uncommon in this Way to have Cyder working for a Fortnight. A Month after this Operation, and the stoping of the Vessels, the Cyder must be racked, and generally speaking, in two Months more a second Time. And if it frets, which however seldom happens in this Method, a third and a fourth Time.

Among these several Methods to make a proper Choice, they should all be tried together with the same Fruit, and of equal Ripeness; the Cyders kept to the same Age and their different Qualities observed. In any other Way you receive no Information, and the Want of Accuracy and Exactness makes the Experiment fruitless and insignificant. Every one will tell you of his Method, that it affords good Cyder; but this general Expression gives no determinate Idea, and forwards Knowledge very little. Would Gentlemen be at the Trouble to keep Notes, and enter all the Differences observable in the same Cyders under several Managements, we might know in a little Time what Method gave the strongest, which the neatest,

the

the roughest, mellowest, or lightest Cyders, and pursue accordingly every one as his Taste or Interest will lead him, that which would answer best. But till something of this Kind be done, we can expect but very slow and inconsiderable Improvements.

In the mean Time, the few Points which Experience already has determined, we shall here lay before the Reader. Namely, That weak Cyder cannot bear above one or two Rackings without too great a Loss of Spirits. That strong Cyder, made of harsh Winter Apples, will stand several Rackings, and thereby grow the mellow, and sooner fit for drinking. That the more you ferment the Liquor the rougher it will grow. That Fermentation is no other Way so well promoted as by putting into your Hogshead from Time to Time some of the Liquor fresh drawn from the Press. And lastly, that if you would have a rich, racy, palatable Cyder, a little inclining to the sweet, you must after your Liquor grows fine prevent as much as possible any farther Fermentation. And if the Liquor should be foul, Ifinglass will help to fine it, by precipitating the flying Lee.

Before we leave this Head, it is to be observed that all Mixtures, whether of one Cyder with another, or of Cyders with white Syrups, Treacle, or other Correctives, which are necessary when the Cyders are ill made and too harsh, are best timed when you are racking. The Fermentation, which always follows Racking, incorporates the several Ingredients, and makes one Liquor of the whole. Those who use Syrups will be glad to know that the Quantity thrown into a Hogshead is from one Quart to six, according to the Harshness of the Cyder.

At what Age Cyder is fit for drinking cannot be exactly settled. Summer Cyder is at its best in six Months or something less. Autumn Cyder in about a Year. The rougher Winter Kinds will require much longer Time; two Years at least, and some from three to five.

Whether

Whether Cyder is improved by bottling is a Question the Palate must resolve. Generally speaking 'tis best liked out of the Cask. However, where your Vessels are not very tight, or the Consumption slow, 'tis requisite to bottle it; for if Air finds Passage into your Cask, or the Head of the Liquor falls, it will certainly turn sour.

'Tis possible some less material Circumstances may have escaped our Notice in the Course of these Directions. If any such there be that deserves to be considered, we shall readily resume the Subject. At present we shall take leave of it, and of the Reader for some Time. The DUBLIN SOCIETY is now adjourned as usual, and 'till they meet again these Weekly Essays cannot be carried on. The first *Tuesday* in *October* is appointed for their Meeting, and they hope it will be an agreeable Promise to their Readers, that they will then certainly resume these Papers. P. M.

Nº. XXVII. *Tuesday, October 11th, 1737.*

WHEN the Society took Leave of the Reader in *June* last, they promised to resume their Paper on the first *Tuesday* in *October*; but as their Meeting was post-poned, by the Absence of many Members, their Observations have necessarily been delayed. This Apology for the inconsiderable Transgression of one Week might have been omitted, had not the Impatience of the Town called upon us to give some Account of a seeming Negligence, and to assure the Publick that the Society has lost nothing of that Zeal and Spirit, which gave Rise to this and all their other Undertakings.

On the contrary they have now Reason to proceed with more Chearfulness and Vigour. Their Endeavours have been so well received, and the Prospect of Success is become so promising, that the Diffidence

and Fearfulness which constantly attend Beginnings and discourage all new Attempts, are changed at present into Alacrity, and a rational well grounded Hope of being useful to their Country.

They have observed with particular Pleasure, that the Papers which relate to the Culture of Flax and Flax-Seed have been, in a distinguishing Manner, well received; and tho' Prejudices hold out still in some Places against Reason and Experience, that with the greater Number their Directions are favourably considered, and bid fair for universal Approbation.

As the Linen Manufacture is and must be the main Support of Trade, and the chief Inlet of Riches into this Kingdom, it must give them a lively Satisfaction to be more useful there than in any other Point. Improvements in any Branch of Business will indeed adorn the Kingdom, but this maintains it. Whatever affects that affects our very Vitals; and to correct an Error there, or introduce an advantageous Practice, is therefore eminently beneficial.

Upon this Account the Society will always bestow upon it more than ordinary Attention, and give Instructions on that Head the Preference they deserve.

Our several Mistakes have been observed upon in some former Papers, and set in Opposition with the more rational and frugal Methods of our Rivals in the Linen Manufacture, as far as it was necessary to direct the Farmer; but where his Business ends, another, and a more considerable one, begins, in which our Errors are probably as numerous, and as pernicious in their Consequences.

That we hitherto have been obliged to other Markets for our Seed, and wrought up half ripe Flax into our Cloths, is chargeable upon the wrong Notions of Flax-Husbandry entertained among us; but it must be owing to farther Mismanagement and other Causes, that all foreign Dealers undersel us, tho' Land and Labour are considerably cheaper here than in most Linen Countries. The Difference is too great to be laid

laid entirely upon the Purchase of our Seed at a dear Rate—Other Reasons must unhappily concur with that which would otherwise be abundantly compensated by lower Rents and lower Wages.

What those are is indeed a disagreeable Inquiry; but it is a necessary one. Remedies cannot be applied successfully till the Disease is known. And though the Cure may even afterwards be difficult, 'tis however the first Step towards it to find out the latent Causes of the Evil.

In the Case before us they are numerous, and some of them not easily removed.—We must learn that valuable Secret of parting with some present Profits in hopes of considerable Returns, and buy Riches in Reversion before we can succeed.

To speak plain, 'Tis not possible our Manufacturers should sell cheap, while their Cloth, besides the Price of the Materials, and the Value of their Labour, is loaded with the Rent of all their little Holdings. This however is notoriously the Case in those Provinces where the Linen Trade has taken Root. The Gentleman's usual Expedient to enhance the Value of his Land, is to set in small Parcels to the Manufacturer, who pays perhaps a double Rent, and certainly has only half a Crop. The rest he must find somewhere, and charges it upon his Linens, which, by this destructive Management, come dearest to the Market from one of the cheapest Countries in all Europe.

The Remedy is obvious: Setting Land to none but Husbandmen, and Tenements only to Manufacturers, as it is the plainest Dictate of common Sense, and the Practice of every Nation under Heaven but our own, would undoubtedly remove the Evil, with a trifling Loss indeed to the Landlords for the present, but with immediate Advantage to the Kingdom, and to themselves considerable Profit in Reversion.

As this is a Point of great Importance, 'tis worth while to be something particular upon it, and to point out distinctly the many Inconveniencies which attend the present Management. The Land occupied by a Manufacturer is commonly not half till'd, and, as it was already hinted, he pays a heavy Rent for a light Crop. His want of Knowledge and Experience, and his Impatience to return to the Loom, prevent that Care and Diligence which good Husbandry requires. He cannot be supposed to understand the Business of the Field, to acquire Dexterity and Neatness in the Performance of it, or to bestow sufficient Time upon it, who attends it only in the second Place. And accordingly the Aukwardness of one of these half-bred Farmers at the Plough, the Harrow, or the Spade, is easily observable, and might afford abundant Room for Raillery, were it not that it affects the Commonwealth too seriously, and too severely to be ludicrously treated; nor indeed can it be otherwise. Arts less difficult than Husbandry require unwearied Practice, and where the Hand only is concern'd, it is obstinate and constant Exercise alone that can make it perfectly obedient to the Artift.

Hence the landed Manufacturer suffers in a double Sense. He is not only a bad Farmer, and in his Crop a considerable Loser from his Want of Time and Skill, but he is less handy also at his Loom, and works even there at a Disadvantage. The Readiness and the Neatness of the Execution depend so much in every Art upon daily Repetitions of the self same Motions, that the least Interruptions are pernicious, much more, where those Interruptions from one Business are fill'd up by attending on another, which requires different Motions, and those violent. The most uncurious Observers are so fully satisfied of this, that 'tis usual to hear common Artificers complain, that their Hand is out for Want of Practice, and in that expressive tho' vulgar Phrase lament the ill Effects of Interruptions.

It

It would be difficult to calculate exactly what this double Loss amounts to. In the Article of Farming 'tis probably a favourable Supposition to estimate it at half Value, and in the Manufacture, where the Gains of the Artificer depend entirely on his own Readiness and Skill, the Deduction is evidently more considerable.

Hence, upon a modest Computation, by blending these two Arts together, half the Produce of our Industry is lost, and the Strength and Labour of our People inconsiderately wasted. Two Men severally employ'd, one in the Business of the Field, and the other at the Loom, would do the Work of four who attend on both together, and the present Labour of the Nation be carried on with half the Hands; or to state the Case more justly, the self-same Hands, which at present till our Grounds, and work our Looms, would, by proper Management, afford double Profit to the Nation. *M.*

Nº. XXVIII. *Tuesday, October 18th, 1737.*

IN our last Paper we considered the bad Effects of blending together Arts entirely different in their Nature, and carrying on by the same Hands the Husbandry and Manufactures of this Kingdom. We observ'd that no material Improvements in either could rationally be expected till they were separately managed, and independently of one another; and that the Nation suffer'd equally at present by the Unskilfulness and Aukwardness of the farming Manufacturers, in the Business of the Field, and at the Loom.—And here the Argument might rest, if it could be hoped, that all are so happily disposed towards their Country, as to be in every Case determin'd by the Interest of it alone. But as this were a Romantick Supposition, and, unfortunately for this Kingdom, too widely distant from the Truth, it

will be necessary to consider how far the Interest of private Persons, coincides with that of the Commonwealth, in the Instance now before us.

That the Manufacturer's Advantage is the same with that of the Nation, in this Case, will admit of no Dispute. 'Tis not possible but he should be the greatest Gainer by his own Readiness and Skill, and feel the good Effects of assiduous Industry in the first Place. 'Tis indeed a necessary Consequence of the Scheme recommended in these Papers, to lower the Price of Manufactures, and upon this Account especially it is recommended to the Readers. But this would be obtained without any Loss to the Artificer, who might earn greater daily Wages in the End, tho' he wrought in Effect at easier Rates. 'Tis well known by Dealers in the Linen, that they can find their Account much better in employing some Weavers at two Shillings, than other at half Price; or to speak the same in other Words, that a thorough Workman can undersel a bad one by one half, with equal Profit to himself. And upon this Account alone, though our Linens were considerably lower'd, superior Skill and Readiness would secure superior Gains to our Artificers as they improve.

Besides this, which has been hinted at in the last Paper, there is another Source of greater Profit to the Manufacturer by abstaining totally from Husbandry. In proportioning the Price of Industry, larger Gains have been prudently annexed to those Kinds of Occupations, which require Instruction and Docility in Youth to go through them with Dexterity and Neatness. The early and wearisome Attendance of an Artificer upon his Business, before he can attain any Degree of Skill, is allowed for afterwards, and estimated in his Wages, which are therefore considerably rais'd above the current Price of bodily Labour only. Hence the Manufacturer who supplies the Place of a common Labourer in his Farm, and few there are who are not guilty of this Blunder, bestows his
Time

Time and Pains certainly below half Value, and undoes himself by his mistaken Diligence. 'Tis a little odd that our People should want Arithmetick to calculate that two is more than one, or which is nearer to the Truth, that he that works for Sixpence at the Spade, while he might earn two Shillings at the Loom, is Eighteen-pence a Loser. But since in Fact they overlook this obvious Truth, 'tis the Duty of those who should know better, to serve them against their Will, withhold from them a Temptation which they are not able to resist, and refuse them any larger Holdings than a Tenement and Garden.

It would be an additional Advantage to this Scheme, to gather all our Manufacturers, who in most Places are dispers'd about the Country into little Villages. 'Tis obvious that Emulation, and consequently Diligence and Skill, is the natural Effect of bringing Artificers together who are engaged in the same Business. They necessarily improve each other, either by mutual Assistance, or at worst, by mutual Endeavours to outdo every one his Neighbour. One Way or other the Publick is benefited by them, and the Manufacture considerably advanced, either by their Friendships or their Jealousies. From these, and perhaps from farther Reasons, 'tis a Matter of Experience, that wherever Chance or the Advantages of Situation have brought together Manufacturers of the same Kind, the Art itself has been improv'd in Proportion to their Numbers, the Work done at easier Rates, and with greater Neatness and Dexterity. Even in the Case before us, tho' the Instances are indeed too few, 'tis however certain that those among our selves are the best skill'd in the Linen Manufacture, who have their Residence in little Towns.—They exceed the Country-Weavers every Way, and have the Advantage equally in the Quickness and Truth of the Performance.

It has been observed already, as the only Objection to this Scheme, that probably it would affect the

Rents of some Estates, which are now parcell'd out to Manufacturers. But even this single Inconvenience would attend it only for a Season, and be abundantly compensated by greater Rents hereafter, better paid, and with more ease incomparably to the Tenant. This, if it be true, reconciles all Interests, and recommends the Scheme to every Order and Rank of Men among us. The Publick and Private Advantage coincide, and there is no farther Room for Argument.

To prove this therefore, it may be laid down as a first Principle, that the lower Kind of Manufacturers work at second hand for the Profit of the Landlord. The Commodities they consume are almost without Exception of the Growth of our own Country, and the more they earn by their Labour, the more of these undoubtedly they will bestow upon themselves. The Intentions of an industrious Weaver is seldom, if at all, to hoard:—To live comfortably, to feed and clothe himself and Family well, and decently, is the Height of his Ambition, and the only Reward he has in View. Hence as his Gains encrease his Consumption is enlarg'd, and by a necessary Consequence, the Demand, and along with it the Price of the Requisites of Life. This advances the Farmer's Profit from his Crop, raises the Value of his Lands, and ends at last in the Advantage of the Landlord.

A small Village, well stock'd with Manufacturers, would be a ready Market to the Neighbouring Farmers, and take off the Crop of a large Circuit at good Rates and easy Carriage; and if all the Weavers in the North were thus parcell'd out in little Settlements of fifty, threescore, or a hundred Families, there is scarce a Farmer in that Province, who would not be within two Miles of some of them. How high the Husbandman estimates such a Situation, no one need be told who is any way conversant in the Country. Lands of the same Goodness yield treble Rents in
many

many Places upon this Account alone, and from the Neighbourhood of a large Town frequently much more. 'Tis not indeed to be imagined the Farmer could raise his Rents, in that Proportion, from the Proximity of a small Village. — But something certainly he might, and probably much higher than what the Manufacturer pays at present. That alone is sufficient to clear the Argument before us, and that will hardly be denied by any who collects together the several Hints dispers'd in these two Papers. That the Manufacturer by greater Skill, and undivided Industry, must earn considerably more. — That his additional Gains will be bestow'd in purchasing Commodities from the Husbandman in greater Quantities, and at higher Rates. — That the Farmer must sell his Crop to more Advantage, where there is a great Demand and ready Markets. — And that the Crop of an understanding and laborious Husbandman will by far exceed that of an Artificer from the same Ground. — These are the several Assertions in these Papers, and if they are true, the Conclusion is certainly a good one. — That by the Scheme propos'd, the Common-wealth in the first Place, and afterwards, in due Order and Proportion, the Landlord, the Tenant, and the Manufacturer would receive a considerable and lasting Benefit. M.

N^o. XXIX. *Tuesday, October 25th, 1737.*

HAVING sufficiently considered one main and obvious Reason of the exorbitant Price of Lins in this Country, notwithstanding the Advantages of easy Rents and easy Wages, and assigned the only Remedy which can effectually remove the Evil; 'tis now Time to proceed to other Causes which unhappily concur with that to disable the *Irish* Dealer from selling at reasonable Rates.

'Tis

'Tis an usual Complaint, and too well grounded, that our Linens travel through more Hands, before they arrive at their last Market, than perhaps any Commodity in *Europe*. Many Pieces have been bought and sold in the same Fair three, four, some probably ten times within the Compass of few Hours; and from the Loom to Exportation, 'tis certainly a moderate Allowance to reckon five Buyers to each Parcel. This, as every man expects a Profit, must enhance the Price considerably, and becomes a weighty Tax upon our Linens, and what is worse, a Tax in a double Sense pernicious as it serves only to encourage Idlers. Our People are not naturally too industrious, and while they can earn their Bread by walking about a Fair, and watching Bargains, as they call them, 'tis hardly to be hop'd they will choose a more laborious Calling. These Observations are so plain, that they cannot want Enlargement.—It may, however, be worth the while to add, that this Practice, which would be every where an Evil, is emphatically so in *Ireland*; because our Dealers trade upon small Stocks, and therefore require large Profits.—And certainly if you multiply your Dealers, and they at the same Time must gain considerably or starve, 'tis not possible but their Commodities should be over-rated in the End.

'Tis indeed generally thought, that since the Linen-Hall has been erected, this pernicious Practice is something less prevailing in the North, and that there are now more Undertakers, who employ Weavers by the Year, and encourag'd by the Conveniencies provided for them, bring up their own Linens to the Market. Those that do so certainly deserve our Thanks. They set a good Example, which, whenever it is followed universally, must be attended with very considerable Advantages, and remove in a great Measure the Incumbrance on our own Manufacture complain'd of in this Paper.

What

What remains upon this Subject will be best convey'd in the Words of the ingenious Author of *Some Considerations on the Improvement of the Linen Manufacture in Ireland*; not only because he has express'd himself as well at least as we could hope to do; but besides, because in handling his Argument he toucheth upon several Particulars, which we design minutely to consider in some of our following Papers, and thereby gives us an Opportunity of laying a Bill of Fare before the Readers—a short Account of what we now design to go upon for his Entertainment and Instruction.

Another Disadvantage to our Linen Manufacture is, that the Flax-Dressers are not made a distinct and separate Trade, or Branch of the Business. The foreign Flax-Dresser hath by this Means vastly the Advantage of ours. Constant Application to this single Business gives him both Knowledge and Dexterity. His Conveniencies are all well contriv'd and appointed; such as Housing, Ovens, and soft-water Ponds, laid contiguous and properly situated, by which he saves considerably in Labour. He has always a Crop of Clover with his Flax; or sows it so early, that after pulling he can have a Crop of Turneps. By long Experience he knows the proper Season for pulling his Flax, that it be neither too late nor too early; and likewise the true Method of watering it without rotting. His Oven prevents the burning or discolouring the Flax in drying, and gives it an evenly Crispness, of great Advantage in breaking and swingling; and all this without any Expence for Fire. His Engines and Machines are of the best Kinds; and kept in good Order, and constant Readiness. The Goodness of his Barns and Granaries hinder Vermin from destroying his Seed or Flax. His Ripplers get off all his Seed, without disordering or turning his Flax-heads and Butts. His Waggon rolls the Seed all out; and his winnowing Engine cleans it without
any

any Loss. The different Size of his Break, and
 Shape of his Scuthing-Handle, together with his
 different Method of using them, and his constant
 Practice of bringing his Flax warm and crisp from
 the Oven to them, save him more than Fifty *per*
Cent. And his softning Mill takes off all Harsh-
 ness from the ripe Flax, without breaking even the
 smallest Fibre; by which Means he hath less Tow,
 and the length of the Flax, which is its chief Per-
 fection, is preserved. Besides this Method gives
 the Flax an equal Softness and Fineness, which saves
 the Spinner a good deal of Trouble, occasions the
 Thread to take the Twist readily, free it of the
 fuzzy rough Substance which appears on our Thread
 made of bottled Flax, and makes the Linen whiten
 evenly, without Stripes or Rows, which frequently
 appear in uneven grested Linen, or that which is
 composed of harsh and unequal Threads. This
 Defect, entirely occasioned by the Want of these
 Mills, have been the principal Cause that our fine
 Linens have never been esteemed at the *Eng-*
lish Markets, and hath led us into a mistaken No-
 tion that coarse Linens are the most profitable
 Branch of the Manufacture; which the Practice of
 all Countries, best acquainted with this Trade, and
 our paying the fine Manufacturer here higher Wa-
 ges, demonstrate to be an Error.

Again, the foreign Flax-Dresser performs all his
 Heckling Work by Girls and Women; whereas
 our Hecklers are generally chosen from among the
 strongest of our Men. Thus, besides the Loss of
 so much Strength to the Publick, here is an addi-
 tional Expence laid on the Manufacture, and the
 Operation is performed to very great Disadvantage.
 For as Heckling is a very nice and delicate Work,
 and requires great Gentleness of Hand, a weak Girl,
 who begins early at this Work, shall at fifteen
 Years of Age heckle as much as a strong young
 Fellow, who begins at sixteen or eighteen Years old,
 and

‘ and that to 20 per Cent. more Advantage, in regard
‘ the strong Fellows generally tear and destroy as
‘ much as they dress.

‘ In a Word, to this Ignorance and Want of
‘ Practice in our People we may impute most of the
‘ Inconveniencies our Linen Manufacture labours
‘ under, such as the entire Loss of our Flax-Seed,
‘ the rotting and spoiling the Flax in making, rating,
‘ and watering, and the discolouring and burning it,
‘ and sometimes their Houses along with it in dry-
‘ ing, besides the unavoidable Expence of Firing.
‘ And at the same Time our Want of the necessary
‘ Machines, Housing, Ovens, Mills, Ponds, and o-
‘ ther Conveniencies, puts us to infinite Labour and
‘ Expence; is an Interruption to other Branches of
‘ the Business, and raises the Price of Flax so high
‘ upon us, that *Holland*, under many Disadvantages,
‘ and particularly the Price of Labour there being
‘ four Times as high as with us, is yet able to pay
‘ the Carriage, and sell us considerable Quantities of
‘ Flax cheaper than we have hitherto been able to
‘ supply ourselves with.

‘ To convince Gentlemen of the Importance and
‘ Advantages of dividing our Linen Manufacture into
‘ distinct Branches, let us consider the Arguments of
‘ the ingenious Sir *William Petty* on this very Sub-
‘ ject, a Gentleman who had a thorough Knowledge
‘ of the Oeconomy of Manufactures. I shall make Use
‘ of his own Words as quoted in the *Spectator*,’ Vol.
III. No. 232. *It is certain that a single Watch could
not be made so cheap in Proportion by one only Man as
a hundred Watches by a hundred; for as there is a vast
Variety in the Work, no one Person could equally suit
himself to all the Parts of it; the Manufacture would
be tedious, and at last but clumsily perform’d. But if
an hundred Watches were to be made by an hundred
Men, the Cases might be assign’d to one, the Dials to
another, the Wheels to another, the Springs to another,
and every Part to a proper Artist. As there would be*

no need of perplexing any one Person with too much Variety, every one would be able to perform his single Part with greater Skill and Expedition; and the hundred Watches would be finished in one fourth Part of the Time of the first one, and every one of them at one fourth Part of the Cost, though the Wages of every Man were equal. The Reduction of the Price of the Manufacture would encrease the Demand of it, all the same Hands would be still employed, and as well paid. The same Rule will hold in Clothing, Shipping, and all other Trades whatsoever. And thus an Addition of Hands to our Manufactures will only reduce the Price of them; the Labourer will still have as much Wages, and will consequently be enabled to purchase more Conveniencies of Life; so that every Interest in the Nation would receive a Benefit from the Increase of our working People. M.

Nº. XXX. Tuesday, November 1st, 1737.

TO fulfil our Promise, we shall now enter upon the Business of Flax-dressing. Our last Paper, if the Success of it has any way answer'd our Intention, must have excited earnest Wishes in all considerate and thinking Readers, that a different Management from what has hitherto prevail'd were introduced among us, and that important Branch of the Linen-Manufacture carried on under better Regulations—What Directions we have been able to procure should not therefore be delay'd, and accordingly 'tis the SOCIETY's Design to postpone every other Consideration, 'till this Subject has receiv'd all the Light that they can throw upon it.

The Practice of the *Dutch*, who unhappily are our Rivals in this important Manufacture, at the same time that they must be our Teachers, is undoubtedly the safest Guide, where good Information can be had. The Difficulty lyes in procuring that which may with Safety

Safety be depended on, and this Difficulty is considerably greater than can be well imagin'd. The *Dutch* are jealous of their Secrets, and by Penalties and other Cautions, guard against Discoveries, in those Branches of their Trade, especially where they know we are most deficient. Few are allowed to examine the Peculiarities of their Management closely, and at leisure, and those least undoubtedly who are suspected to have other Motives, besides Curiosity in their Enquiries. Merchants and Manufacturers of other Countries they particularly set a Watch upon; conceal their Machines with Care from their Inspection, and much more the Method of working and applying them to Use. 'Tis not therefore every Thing, which has been represented as their Practice, that we can prudently admit into our own. The Relations of Artificers, which otherwise would preferably deserve our Notice, are on the contrary to be receiv'd with more than ordinary Diffidence and Caution. 'Tis natural to imagine they saw little, under Restraints, Discouragements, and real Dangers; and what little they could see, few among them would have Courage minutely to examine. A Gentleman who is supposed to be inquisitive only to amuse himself in a strange Country is less liable to Suspicion, and has therefore a better Chance of bringing home valuable Discoveries: His Opportunities are better, and his Danger less; and from such Hands especially we must expect whatever Knowledge we shall acquire hereafter.

The Letters already published upon the Culture of Flax and Flax-Seed are a standing Proof of what has been here asserted. They contained a System of Flax-Husbandry almost entirely new, notwithstanding the most prudent Methods had been taken, and long pursued at a considerable Expence, to procure Information from abroad. The Case appears to us the same in those which are now to follow on Flax-dressing. Notwithstanding the Enquiries which had hi-

therto

therto been made, it will be plain, from the Perusal of them, that we were greatly in the dark in several Parts of that important Business. And that we should still be so, had not the Author of them made Use of the Advantages of his Character and Station to insinuate himself into the Secrets of the *Dutch*, and search for them in that Obscurity wherein they were industriously conceal'd. These Letters come from the same Gentleman with those already mentioned, and if we do not very much mistake, his Observations in them are as much out of the common Road, as peculiar to himself, and as likely to be useful to his Country.

GENTLEMEN,

‘ **I** T would be Ingratitude to conceal the Pleasure
 ‘ I have received from your Approbation of my
 ‘ Letters. I am indeed sensible it was bestow’d in a
 ‘ great Measure upon my good Intentions, and that
 ‘ the better Part of the Merit I can claim consists in
 ‘ the Readiness I have express’d to do Service to my
 ‘ Country—However, as you have led me into an
 ‘ Opinion that the Observations I collected when a-
 ‘ broad may be of real Use—and I must lay the
 ‘ Blame upon the repeated Encouragement you gave
 ‘ me if I conceive too highly of my self—I send you
 ‘ the Remainder of them with more Confidence and
 ‘ better Hopes.

‘ They relate to the Business of Flax-dressing,
 ‘ which I always thought should be a separate Trade,
 ‘ carried on by Persons who made that alone their
 ‘ Livelihood, and by constant and assiduous Atten-
 ‘ dance endeavoured to attain that Dexterity and
 ‘ Readiness which is every where observable in *Hol-*
 ‘ *land*, but hardly any where to be met with in this
 ‘ Country. I am glad to find that I have your Au-
 ‘ thority to support me in this Opinion, and I hope
 ‘ what you have lately published to that Purpose will
 ‘ meet with the Regard it certainly deserves.

‘ Before

Before I go upon Particulars, I beg Leave to observe, that the Business of the Flax-Dresser in *Holland* begins considerably before the Place I assign him in these Papers. 'Tis there the Rule, that the Husbandman concerns himself no farther with his Crop after it is sown. The Flax-Dresser buys it standing, weeds, pulls and saves it his own Way, and at his own Expence. This Custom, I imagine, it would be difficult to introduce among our People, and as I don't perceive a strict Necessity of conforming to their Practice in this Point, though some Advantages undoubtedly attend it, I choose to hint it only, and leave the Whole to the Discretion of the Reader, with this cursory Observation to direct him; that the Farmer who makes his Flax, must provide Conveniences at Home to receive it from the Field; whereas, in the *Dutch* Method he is no ways encumber'd with it, but discharg'd at once from all Care and Concern about it. This to him is a considerable saving, and can be no Hardship on the Flax-Dresser, who in either Way, to carry on his Business to purpose, must provide himself with proper Housing, and have Room sufficient to dispose of it.

But not to dwell any longer on this Head where I see but little Hopes of prevailing with the Farmer—I shall proceed upon a Supposition that he has sav'd his Flax in the Manner directed in my former Letters, and then sold it to the Dresser—The first Business of the Flax-Dresser is, in this Case, rippling or taking off the Boles. This is done with an Instrument in common Use, and too well known to need Description. In *Holland* two Men work at the same Ripple, which is fix'd on the Middle of a Bench, while they sit one at either End opposite to each other. There they take Stroke about, and draw their Flax alternately through the Ripple, till it is clear'd of all the Boles. They are attended by two Boys or Women, who serve them

' with unrippled Flax, and tie that up in Bundles
 ' which has gone through this Operation, and by
 ' this regular Disposal of their Hands the whole is
 ' carried on with great Dispatch. 'Tis worth ob-
 ' serving that the Ripplers take but moderate Handfuls
 ' at a Time, and by that Caution, which is not always
 ' sufficiently observ'd among us, do their Work more
 ' readily, and with greater Safety to the Flax, which
 ' in large Bundles is managed with less Ease, and
 ' often broken on the Ripple. The Women also,
 ' when they tie the rippled Flax in Bundles, are care-
 ' ful not to bind it close; an Error in that Point is
 ' of more Consequence than can be readily imagined.
 ' The Watering never succeeds thoroughly where the
 ' Bundles are hard tied, and the Fermentation is un-
 ' equal in the several Parts, as they are more or less
 ' confin'd.

' These are useful Cautions, and deserve proper
 ' Notice. But there is another of vastly more Im-
 ' portance, and which alone affords sufficient Reason
 ' to appropriate this Business to the Dresser, and take
 ' it entirely from the Farmer.

' 'Tis not to be expected, at least till the common
 ' People of this Country learn more Diligence and
 ' Industry, that the Farmer should be as attentive as
 ' the Dresser to part and sort his Flax. Provided he
 ' gets his Seed well off, and can fit his Flax for Sale,
 ' his Concern with it is at an End, and his Care
 ' extends no farther: And yet it is of great Moment
 ' to the Manufacture that the Flax be well sorted
 ' in the rippling. If the coarse and fine, the ripe
 ' and unripe, are mix'd promiscuously with one ano-
 ' ther, the whole will be greatly injur'd in the Wa-
 ' ter. One Part will still be harsh whilst the other
 ' is almost rotten; and the Yarn, by a necessary
 ' Consequence, be damag'd in a great Degree. In
 ' *Holland* they bestow peculiar Care upon the sort-
 ' ing, and the Women who attend the Ripplers have
 ' it especially in Charge. They are sensible that
 ' unripe

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unripe Flax ferments with greater Ease, and in a shorter Time, than that which has stood to ripen; and that therefore if they are tied up together to be watered, one or other must certainly be spoiled. The Case is in some Degree the same between the coarse and fine, which require the Water more or less according to their Staple.

I am, &c.

R. M.

N^o. XXXI. *Tuesday, November 8th, 1737.*

IT would be needless to detain the Reader by Introductions and prefatory Discourses. The Letters upon Flax-Dressing will recommend themselves, and the Author has left us nothing more to do than to communicate them to the Publick in the same Dress in which he has given them.

GENTLEMEN,

WHEN the Flax is rippled the Dresser's next Care must be to water it, and if his Ponds will contain the whole, it will be best to throw in all his Stock directly from the Bench. 'Tis of considerable Importance in all Business to set about it seasonably, but it is particularly so in this.—When the Summer Heat declines, the least Delay is dangerous. The Water loseth something daily of its Warmth, and the Fermentation of the Flax, by a necessary Consequence, becomes proportionably difficult and tedious. Besides the Season for laying down the Flax to bleach, or for grassing it, as it is usually call'd, wastes in the mean Time, and the Approach of Winter should make the Dresser expeditious. The neglect of a few Days may throw him back as many Months, and if he mispends the Autumn, his Opportunity is lost till Spring. However as it is frequently the Case, that his Stock is too large for his Reservoirs, the Dutch Dresser when that happens houses carefully whatever

he can't dispose of in his Pond.—I observ'd in my former Letters, that stacking is a Practice perfectly unknown in *Holland*, and I beg leave to repeat it here, that, rippled or unrippled, the Dressers of that Country never stack their Flax. What Flax they cannot immediately water from the Ripple, they save in stanch convenient Barns, as they do the Seed in Granaries, and leave no Part of that valuable Crop expos'd to the Injuries of the Air and Weather.

The Arguments in favour of their Methods are to every Capacity so obvious, that I might very well excuse myself from laying them before my Readers.—However I can't forbear inserting them in the same plain Way in which they were convey'd to me by a blunt Boor, to whom I apply'd for Information.

The Fellow it seems did not think my Question worth an Answer, when I ask'd him whether stacking would not serve all the Purposes of housing, which was inevitably attended with considerable Expence? He said nothing but led me to his Hay-Rick, and taking out a Handful, desired me to observe how the Out-sides were damag'd; how rotten and consequently how weak and brittle the weather-beaten Hay. Then ask'd me in his turn if this were Flax, what kind of Cloth would you expect from it?—The Analogy undoubtedly will hold, and I own the Peasant's Reasoning so thoroughly convinced me, that ever since I have look'd upon our Practice as a destructive one, and accordingly have endeavour'd to explode it.

There is indeed a Difference between Hay and Flax; as the latter is much stronger, it does not rot entirely and go to Powder between your Fingers like the other.—It will even stand the Dressing, notwithstanding the Injury it has receiv'd. But this aggravates the Evil, instead of alleviating it.—If the Flax were so far damaged, as not to bear the Dressing.

some-

something would indeed be lost in the Quantity, and
 considerably more in the Length and consequently
 in the Value of it. But however, when that was
 over, the Manufacture could receive no farther Da-
 mage; whereas now it is spun into our Yarn and
 wove into our Cloths, which are therefore of une-
 qual Strength in different Parts, and must break
 into Holes whenever the weaker rotten Threads
 meet with any Stress, either in the bleaching or the
 wearing.

I hope, Gentlemen, you will forgive me this Di-
 gression; I was led into it by the great Importance
 of the Subject. Housing is so necessary, and at the
 same Time so much neglected, that I could not
 wave this Opportunity of recommending it a second
 Time to the serious Consideration of the Readers.—
 I shall now return to the immediate Business of this
 Letter, and proceed to give Directions to the Flax-
 Dresser, how to Water his Flax in the best Manner.
 Our general Negligence, in an Article of so much
 Moment, makes it necessary to recommend the
 Choice of proper Water in the first Place. Two
 Parts in three of those, who deal in Flax among us,
 lay it down in Bog-Holes or in Rivers, and seem
 to think that every Kind of Water is equally good
 with any other. But this is certainly a consider-
 able Mistake, and has, I am afraid, done more
 Injury to the Linens of this Kingdom, than our
 People are aware of. Bog-Water gives the Flax a
 tawney Colour, and from the peculiar Cast of too
 many of our Cloths we have Reason to be satisfied,
 that they retain something of the dusky Hue which the
 Flax received in watering. Notwithstanding the best
 Endeavours of our Bleachers our Linens are in Co-
 lour greatly inferior to the *Dutch*, and I know no
 more likely Cause to be assigned for it, than the
 black muddy Tincture most of our Flax imbibes in
 Bog-holes. Those who lay their Flax in Rivers are
 safe indeed against this Evil; but are liable on the
 other

other Hand to several Inconveniencies very well worth avoiding. A strong Current disorders and entangles it, and entails thereby an additional Labour on the Dresser, who, besides his Pains runs a considerable Hazard of breaking and damaging his Flax in setting it to rights again; — add to this, that could the former be avoided, an Inconveniency however always certainly attends the Use of flowing Water. It answers the End less speedily, and procures at best a slow and tedious Fermentation.

By these Observations on our Management, the Reader will perceive that a proper Choice of Water consists chiefly in seeking those Qualities together, which we have hitherto imprudently divided. One Set among us have chosen standing Waters, without attending to their Clearness; the other, attentive only to that Point, have made Use of running Waters to avoid the Foulness of the other. — Each have neglected one main Quality, and accordingly succeeded but in Part. Those indeed the best who have used the clearest Water; but none well, because they did not use together the clearest and stillest. There is indeed a third Quality in Water requisite to the Purposes of Flax-Dressing, but as our People are pretty well aware of it, I need do no more than name it, and may conclude this Letter by this general Instruction, that the clearest, stillest, softest Water is the best.

I am, &c.

R. M.

N^o. XXXII. Tuesday, November 15th, 1737.

GENTLEMEN,

TIS the natural Consequence of the Observations in my last, that a convenient Situation is nearly of the same Importance to the Flax-Dresser, as it is universally allowed to be to the Bleacher.

Our

Our Dressers, if any there be among us who deserve
 the Name, do not seem indeed to be aware of this,
 and while they undertake only small Quantities of
 Flax and allow themselves the indiscriminate Use of
 any Kind of Water, 'tis no Wonder they should
 not. But whenever they enlarge their Business,
 grow nice and curious in their Management, and
 commence Flax-Dressers in good Earnest, they will
 find the Command of Water immediately requisite
 to their Success. 'Tis as material a Circumstance as
 any other, as even the Choice of proper Water,
 that there be a sufficient Supply of it at Hand; o-
 therwise the Charge of Carriage to and from a di-
 stant Place must be laid upon the Dressing, and en-
 hance the Price of it considerably.

Give me Leave to observe as I go on, that the
 Necessity of having settled Flax-Dressers resident
 in convenient Habitations, and disposed about the
 Country, is from this alone indisputably made out.
 Our itinerant Undertakers in this Kind must take
 the Water as they find it, good or bad, distant or
 at Hand, as the Place where they are employed af-
 fords it; and if there be any Weight in what I have
 offered in these Letters, let their Skill otherwise be
 what it will, this single Circumstance must defeat
 their best Endeavours.

It may perhaps be difficult readily to engage our
 People in a Method so widely different from their
 own — But I would willingly persuade myself that
 it is however not impossible. Could I see but
 one good Flax-Dresser fixed in a proper Habitation,
 and provided with all Conveniencies at the publick
 Charge, I should hardly entertain a Doubt of con-
 vincing the most obstinate. The Success which must
 infallibly attend him would be an Argument to all
 Capacities alike, and give irresistible Encourage-
 ment to this Branch of the Linen Manufacture. The
 proper End of all Encouragements is to remove
 the Doubts and Fears which throw a Damp on every

new Attempt, and to engage the timorous to venture an Experiment. And surely nothing could answer that Purpose more effectually, than a standing Instance of Success always before their Eyes. It has been frequently proposed as a Scheme likely to succeed, to bring over Flax-Dressers to instruct and direct our People. — But without they are disposed of in proper and convenient Settlements, I must think the Scheme deficient, and to speak out sincerely, of very little Use. The same Objections which now lye against our rambling Flax-Dressers will equally affect the other. They will do their Business as clumsily when they are destitute of their Conveniencies; or should they exceed a little in Dexterity and Neatness the Dressers among ourselves, yet a full and sufficient Instance of regular and masterly Flax-Dressing they cannot possibly afford us. To the perfect Execution of this Art, there are so many Things required as can no where else be had but in a well chosen Settlement, and to what Height it may be carried we shall never know, till we set about it in that Way.

I beg Leave to observe besides, and as an additional Argument to support what I have offered — That without an Instance of the real Advantages of good and regular Flax-Dressing, our People will scarce be persuaded to attempt it. — Whereas if a single Flax-Dresser had enriched himself by that one Business, thousands would immediately fall into it. Instructions and Directions can only then take Place, when due Care has been bestowed, that some there should be desirous to make Use of them; and therefore the best Endeavours to inform our People will probably avail but little, till they have palpable experimental Proof, that it is their Advantage to be taught.

You may think this Hint a little out of Place, but if you consider it as I do, you'll easily forgive me. It will, methinks, should it ever be laid hold

of,

of, effectually promote Flax-Dressing, and in the readiest Manner introduce that valuable Art so greatly wanted and so little understood.

To return — The most eligible Situation for the Flax-Dresser is in the Neighbourhood of a large Lough, or a still River, and there in the most convenient Spot for laying out his Ponds and Reservoirs. For however strange it may appear to us, who unhappily are used to a slovenly Negligence in this Point, the Dresser, who would perfectly succeed, must have Ponds in every Situation. 'Tis true, large Basons of standing Water and slow Currents are naturally good for Flax, and may be used with tolerable Safety; but they are still capable of Improvement, as no Current is certainly better than a slow one, and a small Pond less liable to Disturbance from Winds and Waves than a large Lake. 'Tis probable our People will object, that it cannot possibly quit Cost, to provide against the accidental Inconveniencies of a sudden Storm, or the small Loss of Time which attends watering in a Current at so considerable an Expence. — But I beg Leave to refer them to the *Dutch*, who by long Experience are convinced that the best Conveniencies are always cheapest, and proceed accordingly in this and in every other Case. I should not indeed despair assigning good Reasons for their Practice if this were a proper Place to indulge Philosophical Speculations. 'Tis certain the longer the Water settles the softer it always proves, and the more kindly it ferments with the saponaceous Juice of Plants. And it might be easily made out, that the slowest Currents and even standing Waters exposed to the Action of the Wind, want some Assistance to make them as soft as could be wished. But as in the Course of all these Letters I have built only upon Precedents, I am willing to let this Point as well as others rest upon that Foundation.

' To proceed — As a Situation favourable in every
 ' Circumstance cannot always be obtained, the Flax-
 ' Dresser may sit down with Safety in any Place where
 ' there is Command of Water, and Room for Re-
 ' servoirs, tho' the Water should not prove of the
 ' best and softest Kind; Springs excepted, which ob-
 ' stinately retain their Harshness. Any Stream suffi-
 ' cient to supply him may with proper Care be made
 ' serviceable to his Purpose. Admitting it into his
 ' Ponds betimes, and allowing it a longer Season to
 ' deposit gross hard and stony Particles, and receive
 ' the Influence of Sun and Air will make indifferent
 ' Water equal to the best. Where he has capacious
 ' Ponds, 'tis the Dresser's Fault if he has not good
 ' Water, and without entering into the Reasons of the
 ' Thing, 'tis indisputably certain from Experience,
 ' that Heat and Rest, which he may bestow upon it
 ' by filling his Reservoirs early in the Summer, will
 ' take off all that Hardness which may hurt him. —
 ' Indeed different Kinds of Water will require different
 ' Times for settling, some more and others less, but
 ' this will be soon determined, and demands no parti-
 ' cular Directions. The main Point is to have Re-
 ' servoirs sufficient for this Purpose. Whoever has
 ' them may always procure good Water, and with-
 ' out them nothing but a scarce and lucky Situation
 ' can afford Success, and even that but imperfectly
 ' after all.

I am, &c.

R. M.

No. XXXIII. Tuesday, November 22d. 1737.

GENTLEMEN,

' IN the several Particulars mentioned in my for-
 ' mer Letters I had inveterate Prejudices, and the
 ' Weight of ancient Custom against me. They were
 ' Directions to our People entirely new, and for that
 ' very Reason hard to inculcate — That the Dresser

' should have a settled Habitation — Avoid Bog-
 ' Holes and Rivers, the only Conveniences almost
 ' we are acquainted with for watering — Provide
 ' himself with Ponds and Reservoirs, and stranger
 ' still, with stanch and capacious Barns to house his un-
 ' dressed Flax — I therefore hope to be excused for
 ' enlarging on those Assertions. I was very sensible
 ' they would appear extraordinary to most among
 ' us, and require all the Assistance I could give
 ' them to make their Way against received Opinions.
 ' What I am at present to proceed upon is of a dif-
 ' ferent Nature, and accordingly this Letter will con-
 ' sist of little more than plain Instructions delivered
 ' in as plain a Manner.

' When the Flax is laid in Water it must be co-
 ' vered with a Weight to keep it down. Clay,
 ' Rushes, Fern or Timber, answer this Purpose
 ' equally — and indeed any Thing will do tolerably
 ' well, sharp Stones excepted, which are apt to cut
 ' the Flax. However, if the *Dutch* are to be be-
 ' lieved — there is even in this a Choice And though
 ' it seems in Speculation perfectly indifferent what
 ' your Flax is covered with, Experience, they will
 ' tell you, has determined it is otherwise in Fact. They
 ' use the Slutch or Mire at the Bottom of their Ponds,
 ' which is scarce any Thing besides the Dirt of the
 ' Flax itself, which in those standing Waters forms
 ' in Time a black and heavy Sediment. This they
 ' imagine gives the Flax that light grey Tinc-
 ' ture, which is perhaps less pleasing to an unskilful
 ' Eye, but takes the Bleach more kindly, and
 ' brightens better in the Cloth than the white or yel-
 ' low Cast of ours. Whether they are right in their
 ' Opinion, a few Trials will inform us. Certain it
 ' is that their Flax is of a different Hue, and takes
 ' a better Colour in the bleaching Green than the
 ' greater Part of ours. And should this peculiar Kind
 ' of Slime contribute in any Measure towards it, an

' ad-
 ' vantage

• additional Motive must arise from thence to use
 • Ponds and Reservoirs, where alone it can be had.
 • 'Tis impossible exactly to determine how long the
 • Flax should lye in Water. The Fermentation ne-
 • cessary to free the Harle from the Bunn is over in a
 • longer or a shorter Time, according to the Quality
 • of both Flax and Water. Sometimes where the
 • Water is exceeding soft, the Weather warm, and the
 • Flax easy to be wrought upon, three or four Days
 • will be sufficient. In different Circumstances the
 • Fermentation lingers a Week, ten Days, and, as I
 • am informed in some Cases, sixteen or eighteen
 • Days. There can be therefore no general Direc-
 • tions on this Head. — But the Dresser who knows
 • his Flax and Water, and has made proper Observa-
 • tions on the different Effects of different Weather
 • cannot be greatly at a Loss.

• However, it will be an useful Precaution in the
 • Dresser, to make repeated Trials of his Flax after
 • it has lain three Days. — If the Bunn parts freely
 • from the Harle and the Flax dresses kindly after
 • drying, it should be drawn immediately; it has
 • received all the Benefit of watering, and is impaired
 • considerably every Hour it steeps, when that is over.
 • I shall add, that it is not to be expected that Flax
 • should have lost all Harshness when it comes di-
 • rectly from the Water. — The Dresser who waits
 • for that will have weak and half-rotten Flax — An
 • Allowance must be made for grassing, which takes
 • off something of the Stubbornness the very best Flax
 • retains if it be not over watered. — Our People have
 • the more Occasion for an Admonition of this Kind,
 • because among us it is a common Error to let Flax
 • waste itself by Fermentation. — And we are so fond
 • of Softness, that for its Sake, in this and every o-
 • ther Article of Management, we give up Strength
 • and Soundness, Qualities incomparably more valu-
 • able. The *Dutch* are on the contrary solicitous in

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the first Place for Strength, and will run every other Hazard sooner than that of weakening the Harle — and indeed the Disparity is obvious. — If your Harle is damaged, or to speak more properly, half rotten, there is no Remedy in After-management. — Whereas by the Help of longer grassing and afterwards of the softening Engines, too much Harshness may in a great Measure be removed. The skilful Dresser's Business is indeed to avoid both, and if he tries a Sheaf of his Flax daily, as directed in the Beginning of this Paragraph, he cannot err considerably. But till by long Experience he is secured against Mistakes, 'tis his best Way however to lean to the safer Side, and draw his Flax too early rather than too late.

When the watering is over — grassing follows immediately upon it. This is nothing more than spreading out the Flax upon dry Ground covered with short Grass, there to lye till it is dried, bleached, and softened sufficiently for Use. The shorter the Grass the better for this Purpose. If it be of any Length it retains too much Moisture after Rains and Dews, occasions a second Fermentation in the Flax, retards the drying of it, and frequently rots the Harle. And indeed though the Operation takes its Name from thence, 'tis not a necessary Circumstance that the Flax be laid on Grass — Dry Banks of Sand or stony Gravel free from Clay are perhaps fittest for this Use. Though Lands under short Grass are generally recommended by Flax-Dressers 'tis chiefly in Opposition to plough'd Grounds, where the Flax would be fullied and discoloured. Any dry Exposure free from Dirt may be used with Safety, and among those the warmest are the best.

There are but few Directions to be given on this Head, the most material are — that the Flax be turned frequently every second Day or oftner. — That due Care be had of grassing it beyond the proper

proper Time, which is almost as pernicious as watering it too much, and that for the same Reasons — and that when it is taken up it be regularly sorted, and the several Kinds separately tied up in Sheaves. — The two first of these Particulars require no Manner of Enlargement, since the Practice of turning Flax universally prevails, and every Body knows that the usual Time for grassing is from a Fortnight to three Weeks, according to the Weather and the Goodness of the Flax. — On the third Particular a few Words may be necessary, because sorting is but little understood among us. — I shall therefore conclude by observing to your Readers, that when the *Dutch* tie up their Flax, which they generally do in Sheaves as large as those of Corn, they take peculiar Care that the Flax in every Sheaf be of the same Length, Fineness, Strength, and Softness. — By this Caution the several Staples are kept asunder and distinct, ready to be applied, each to its proper Use, to the great Ease and Advantage of the Manufacturers, who according to their different Wants may be immediately supplied with every Kind. *I am, &c.*

R. M.

N^o. XXXIV. *Tuesday, November 29th. 1737.*

GENTLEMEN,

THERE is not any Article in Flax-Dressing of more Importance to the Linen Manufacture, than the one I am at present to consider. The Success of every subsequent Operation on the Flax depends almost entirely on good drying; and notwithstanding the utmost Care in rippling, watering and grassing, an Error here may disappoint at last the Dresser's most valuable Hopes. 'Tis therefore a Matter of Surprise so little Thought has been hitherto bestowed upon this Subject, that no Method

'thod of drying Flax with Safety has been intro-
 'duced among us. The common Way of laying it
 'on Hurdles and lighting a Fire under them, is at
 'first Sight subject to so many Inconveniencies, that
 'how it should at all be dreamed of, much more,
 'how it should meet with so favourable a Reception
 'as to continue to this Day, the prevailing Practice
 'of the Country, is to me perfectly inconceivable.—
 'That the Smoke in its Passage through the Flax must
 'infallibly discolour it. — That several Sheaves piled
 'upon one another, and from the Situation of the
 'Fire placed at different Distances from its Action,
 'dry unequally. — That therefore of the same Parcel
 'one Sheaf must be almost burnt, and another not
 'crisp enough for Use. — That in the self same Sheaf
 'a Heat, conveyed principally by Smoke, acts consi-
 'derably slower on the Centre than upon the external
 'Parts, — and by a necessary Consequence that these
 'must be entirely parched before the other is even to-
 'lerably dry.—These methinks were obvious Truths,
 'and which it could have been no difficult Matter to
 'foresee. Add to them the Danger of firing the
 'whole Pile, which by sad Experience we are taught
 'is no imaginary one. — Allow for many smaller In-
 'conveniencies, which will be better apprehended
 'from the Sequel of this Letter, and I fancy you will
 'join with me in Opinion that among the many Er-
 'rors we are guilty of, 'tis hardly possible to find a
 'more extraordinary Instance of bad Management.

'Had the Remedy been far removed from common
 'Observation it would be some Apology. But to
 'overlook a Conveniency for drying of daily Use in
 'other Cases, and which alone could answer all the
 'Dresser's Purposes together, is unaccountable Ne-
 'gligence indeed, and I cannot help blushing for my
 'Countrymen, that it should still be necessary to re-
 'commend an Oven to them.

'The main Advantages of this Conveniency above
 'all others present themselves so readily, that it would
 'be

• be needless to enlarge upon them. It dries cleanly,
 • equally and quickly, at a small Expence and safely,
 • and is liable to no Objection. But some Advan-
 • tages there are no Ways inconsiderable, though of an
 • inferior Kind, which it will be proper to take No-
 • tice of. These arise chiefly from the peculiar man-
 • ner of disposing the Oven and using it, and will be
 • best explain'd in a particular Description of the
 • *Dutch Dresser's Management.*

I have observ'd in former Letters, that whoever
 • undertakes Flax-Dressing in that Country provides
 • himself with proper Houfings. By that Name,
 • besides his Barns and Granaries, you must understand
 • a Working-House, where he breaks his Flax and
 • scutches it. The usual Dimensions of this Place
 • are in the clear thirty Feet by fourteen, something
 • larger where great Business is carried on, but seldom
 • if ever less. Care is taken that the Whole be well
 • lighted, and conveniently laid out to receive the
 • Breaks, and at the same Time leave Room for
 • Scutching. In this House, and at one End of it,
 • the Dresser builds his Oven within a large capa-
 • cious Chimney, to prevent all Danger of firing the
 • Place.—This Situation saves him Labour, his Flax
 • when dried is ready and at Hand, and he con-
 • veys it to the Break without Expence. And this I
 • mention as the first of those Advantages, which
 • may be obtained by a little Skill and good Oeco-
 • nomy.

• He secures a second, and more considerable one,
 • by proportioning exactly the Size and Capacity of
 • his Oven, to the Dimensions of his Work-house.
 • When the Flax is warm and crisp it works with
 • greater Ease, and consequently at lower Rates, and
 • in other Respects also to more Advantage. As it
 • cools and gives, it again grows tough, requires
 • more Stress and Time under the Break, cuts fre-
 • quently by the Violence which then becomes ne-
 • cessary in the Stroke, runs more to Tow of course,

‘ is charg’d with a higher Price for Labour, and is
 ‘ considerably worse. Hence the Dresser takes pe-
 ‘ culiar Care to bring his Flax in full Crispness to
 ‘ break, and builds his Oven so, that in one Day he
 ‘ may work off what it has dried in the foregoing
 ‘ Night. By this Means the Bunn is always brittle,
 ‘ flies off with few light Strokes, and leaves the Harle
 ‘ sound and in perfect Strength.

‘ At their rate of working an Oven of fifteen Feet
 ‘ long, ten Feet wide, and five Feet high, will keep
 ‘ as many Hands employ’d one Day, as can be con-
 ‘ veniently dispos’d of in the Work-house above-
 ‘ mention’d. And I believe our People will ima-
 ‘ gine that they have upon those Terms an heavy
 ‘ Task to go through. In our slovenly Way of do-
 ‘ ing Business, half the Quantity would be too much
 ‘ for twice the Hands. So great are the Advantages
 ‘ of Skill and proper Management.

‘ It will be necessary to observe that the *Dutch*, as
 ‘ an Improvement upon the former Caution, never
 ‘ draw two Sheaves together. They take them sing-
 ‘ ly from the Oven as they want them, and give them
 ‘ all the Benefit of what little Heat remains as long
 ‘ as they can spare them from the Break.

‘ Before I proceed to other Circumstances of their
 ‘ Practice, since I have given the Dimensions of the
 ‘ Oven, it will be proper to finish the Description
 ‘ of it. From the Size of it it must be stronger than
 ‘ the Bakers, well roofed, thoroughly secured, and
 ‘ shut with a wooden Door. The Entrance may
 ‘ be in every Oven equal—just large enough to ad-
 ‘ mit a Man with tolerable Ease.

‘ To return—The next Thing the *Dutch* provide
 ‘ for, is to save the Charge of Firing. In the first
 ‘ heating of the Oven there is no Room for this, and
 ‘ proper Fuel must be had; but when once they
 ‘ have begun to break and scutch, the Dirt and Straws,
 ‘ which are beat out of the Flax in working, serve
 ‘ them ever after without any additional Expence;

' and each Parcel affords Firing for the next, in a
 ' regular Succession, till the whole is dried. These
 ' little Arts, and seemingly inconsiderable Instances
 ' of good Oeconomy, give the *Dutch* so much Ad-
 ' vantage over us, that I must beg leave to remind
 ' your Readers, that they deserve more of their At-
 ' tention than perhaps they have hitherto bestow'd
 ' upon them. In Business of this Kind, where the
 ' Profits are necessarily small, Waste must be felt, be
 ' it ever so trifling in Appearance; and accumulated
 ' and continual Waste must infallibly end in Ruin,
 ' though each Particular taken singly and asunder is
 ' perhaps too minute for Observation.

' Of this Kind more especially than any other is
 ' the Waste of Time and Labour. Three or four
 ' Minutes lost cannot well be charg'd in an Account,
 ' much less the Misapplication of a little Strength;
 ' and yet multiply these Minutes into Hours, or in-
 ' crease the Waste of Spirits till it becomes Weari-
 ' ness, and the plain palpable Loss upon the Whole
 ' will give sufficient Evidence how much was lost by
 ' Parcels.

' The *Dutch* are aware of this more than any Na-
 ' tion under Heaven, and therefore lay out all their
 ' Art in saving Time and Labour. In the Case be-
 ' fore us they kindle Fire in the Oven early in the
 ' Evening—some Hours before the Work is over.
 ' The Sweepings of the Flax are soon thrown in and
 ' lighted, and the Oven heats and cools again suffi-
 ' ciently before the Breaks and Scutches are laid by.
 ' 'Tis ready to be fill'd, when the Business of that
 ' Day is ended, and when the next begins, 'tis again
 ' ready to be drawn—not a Minute is lost in the
 ' whole Round, and the Work proceeds in a regular
 ' Succession no where interrupted.

' I shall conclude by informing the Flax-Dresser,
 ' that his Oven is then of a proper Heat, when a Man
 ' can stand in it without Uneasiness. This is the Rule
 ' in *Holland*, and 'tis an Advantage peculiar to the
 ' Oven,

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‘ Oven, that the Heat of it can be thus exactly measured. Kilns or Stoves cannot with equal Certainty be tried; their Heat is variable and unsteady, and for that Reason dangerous and unfit for Flax. Which, to collect the whole Purport of this Letter into one general Assertion, can no where else be dried so perfectly as in an Oven.’

I am, &c.

R. M.

Nº. XXXV. *Tuesday, December 6th, 1737.*

GENTLEMEN,

‘ I Observed in my last Letter, that the Quantity of Flax, which the *Dutch* Dresser breaks and scutches in a Day, is, in Proportion to the Number of Hands employ’d by him, considerably larger than that which we should here expect to have wrought off in the same Time—That this Difference in the Dispatch of Business ariseth chiefly from the Crispness of the Flax, when it is laid under the Break; and therefore will subsist no longer than till our People are prevail’d upon to dry as they do, and use an Oven. The narrow Compass within which I am confin’d, to suit my Letters to the Dimensions of your Paper, allow’d of no Enlargement; and this Assertion, however it deserv’d it, I had not room particularly to explain, much less to support by proper Arguments.

‘ Give me leave therefore, to resume them, and as it is of the greatest Importance to the Manufacture, to improve upon it, by shewing more minutely in what Proportion the *Dutch* exceed us in Dispatch.

‘ A Penny is the constant Price paid in *Holland* to the Undertaker, for breaking and scutching Flax by Wholesale—something less therefore to the Jour-

‘ neyman—and yet ’tis common in the latter, to prefer Payment by the Pound, to the usual Wages of the Country twenty Pence a Day.—’Tis therefore evident that the Journeyman Flax-Dresser among them breaks and scutches singly above twenty Pounds of Flax.

‘ Our People on the contrary choose to receive their daily Wages, which seldom exceed Nine Pence, never Ten, rather than be paid according to the Quantity wrought off, though five Farthings is the lowest Price given any where in *Ireland* by the Pound. Our Dresser therefore, upon the fairest Calculation, breaks and scutches but eight Pounds of Flax a Day, and the Quantities of Work perform’d by the same Hands, in the same Time, are to one another in the amazing Disproportion of two and a half to one.

‘ The Facts are indisputable, and the Conclusion, how surprising soever it may seem, fairly and regularly drawn. Three Parts in five of the Strength and Labour of our Dressers are plainly misapplied, and for want of good Conveniencies to facilitate their Work entirely wasted.

‘ I believe I need not call upon the Readers to observe that a Manufacture carried on under such Pressures—Disadvantages is an Expression of too weak a meaning—can never flourish; ’tis rather a Wonder it should live, and support it self, though faintly, against the Weight and Rivalship of a People equally remarkable for Oeconomy and Industry.—However, to do common Justice to the Argument, indulge me for a Moment longer, and give me leave to set it in another Light.

‘ Our Labourer can afford to work for ten Pence, and, provided he receive daily that small Pittance, can maintain himself and Family with Ease.—The *Hollander* to the same Purposes wants twice that Sum, and must therefore earn his two Pence for the other’s Penny. At present he does more than this,—Good

‘ Conveniencies, and superior Skill in the ready Use
 ‘ of them, enable him to underwork us considerably
 ‘ beyond that Proportion.—But suppose our Dresser’s
 ‘ equally well provided, give them the same Dexte-
 ‘ rity,—and that a few Years Experience will be-
 ‘ stow,—the Tables immediately are turn’d. Our
 ‘ Flax must come cheaper from the Break and Scutches
 ‘ by one half, and they instead of us be reduced to
 ‘ Straights and Shifts to support a decaying Manu-
 ‘ facture.

‘ Could our Journeymen hereafter, as theirs actu-
 ‘ ally do, work off twenty Pounds of Flax a Day,
 ‘ they might afford their Labour for a Half-Penny
 ‘ per Pound; three Parts in five of the present Price
 ‘ would be taken off without Prejudice to them, and
 ‘ by proportionable Improvement in other Branches
 ‘ of the Manufacture, our Cloths would come cheaper
 ‘ to the Market, than from any other Country under
 ‘ Heaven. According to the usual Computation, that
 ‘ three Quarters of the current Price of Linens is the
 ‘ Purchase of Labour only, our Manufacturers,
 ‘ who live comfortably at Home upon half the Wa-
 ‘ ges paid in *Holland*, can with equal Industry and
 ‘ Skill underwork the *Dutch* five and thirty Pounds
 ‘ in every Hundred.—A Deduction which whenever
 ‘ they are forced upon, ’tis impossible they should
 ‘ carry on their Trade.

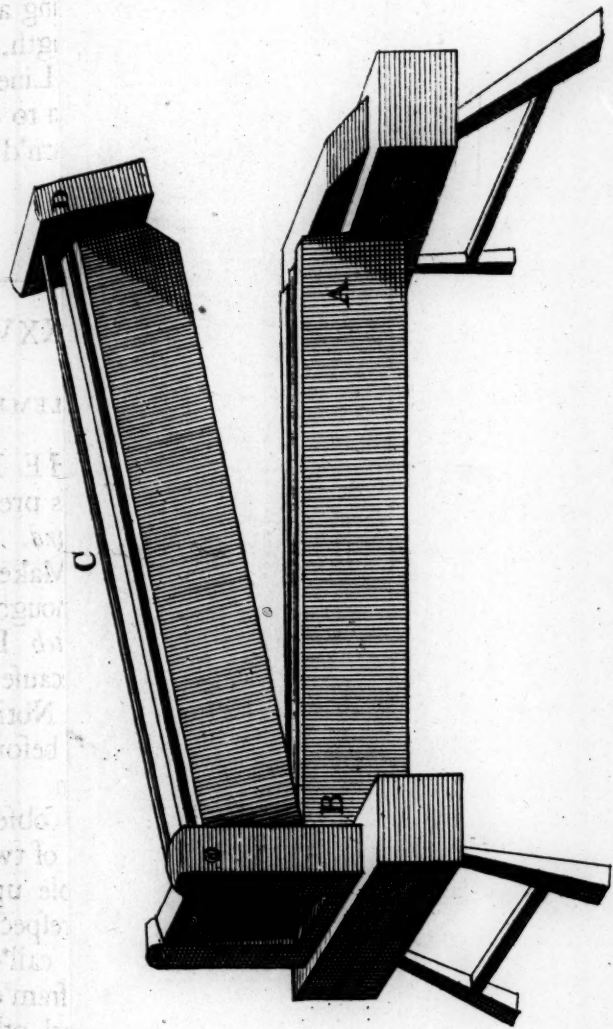
‘ I won’t indeed pretend to vouch for the Exactness
 ‘ of that Computation.—’Tis no easy Matter to strike
 ‘ a Medium upon the several Staples, and determine
 ‘ what Part of the whole Price should be charged on
 ‘ the Materials; and how much remains as the Pro-
 ‘ duce of mere Labour.—But certain I am, that in
 ‘ fine Cloths, the Estimate is considerably too low.
 ‘ The Proportion between the Worth of the Mate-
 ‘ rials in their native State, and the Value afterwards,
 ‘ when manufactured and improved, is in Linens of
 ‘ the finest Staple as ten, twenty, or perhaps more to
 ‘ one, and therefore there at least the Argument car-

‘ ries its full Weight, and with a little Oeconomy
 ‘ and Industry, we may undersell the *Dutch* a great
 ‘ deal more than thirty five per Cent.

‘ To confirm this Assertion—which I hope may
 ‘ be of use to encourage the Methods I propose for
 ‘ the future Management of Flax—give me leave
 ‘ to observe farther from my last,—that it is not only
 ‘ by misapplying the Strength and Labour of our
 ‘ People, that we suffer in the Articles before us,—
 ‘ but besides, and that considerably, by the Waste
 ‘ committed on the Flax, for want of thorough dry-
 ‘ ing and a proper Crispness. We are now obliged
 ‘ to use forcible and repeated Strokes in breaking, or
 ‘ to speak more properly to pound rather than break
 ‘ the Harle. This weakens and impairs it, and be-
 ‘ sides deprives it of its proper Length, one of the
 ‘ most valuable Qualities it has. In breaking the
 ‘ Force is applied cross-wise, and athwart the Grain,
 ‘ and therefore where it is too great, or too long con-
 ‘ tinued, bruisseth and cuts the Fibres; which af-
 ‘ terwards in going through the Hackles snap where
 ‘ they are weakest and of course fall into Tow. ’Tis
 ‘ impossible to ascertain this Damage, but at a guess,
 ‘ I should imagine that by this unhappy though ne-
 ‘ cessary Effect of bad drying, we may hackle off
 ‘ from the same Flax one Part in four more Tow,
 ‘ than the Dresser does in *Holland*.—If so our Loss
 ‘ under this Head is considerably enhanc’d.—Or to
 ‘ set the same Assertion in a more comfortable Light,
 ‘ ’tis upon this Supposition in our Power, by a little
 ‘ Charge to lower our present Prices, without any
 ‘ Diminution to the Owner’s Profit, by encreasing
 ‘ the Quantity of vendible good Flax, dress’d out of
 ‘ the same Parcel.

‘ I cannot leave any thing with the Readers more
 ‘ likely to encourage them, and therefore shall con-
 ‘ clude by this general View of the whole Argument.
 ‘ —We waste by the present Misapplication of our
 ‘ Labour three Parts in five of the Dresser’s In-

Plate 1 p. 151



J. Mynde sc.

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‘ dustry.—We lose one Part in ten nearly of our
 ‘ Flax.—And yet we stand our Ground, though
 ‘ with Difficulty against the *Dutch*.—Suppose these
 ‘ Evils remedied, and what must be the Consequence
 ‘ —’tis so plain a one, that it is almost Impertinence
 ‘ to draw it.—But it is at the same Time of so en-
 ‘ couraging a Nature that I cannot forbear inserting
 ‘ it at length.—The *Dutch* must be obliged to give
 ‘ up the Linen Trade,—which it will be impossible
 ‘ for them to carry on with any Profit, whenever we
 ‘ have learn’d how to husband our Advantages.

I am, &c.

R. M.

Nº. XXXVI. *Tuesday, December 13th, 1737.*

GENTLEMEN,

‘ **T**HE Instrument made use of to break Flax
 ‘ is pretty much the same in this Country and
 ‘ in *Holland*. However, as there is some Difference
 ‘ in the Make, and more in the Manner of applying
 ‘ it, I thought it necessary to prefix a Draught of
 ‘ the *Dutch Break* † to the Directions in this Let-
 ‘ ter; because Words cannot convey so clean and dis-
 ‘ tinct a Notion of Machines, as the Reader ought
 ‘ to have before him, when he is to be taught the Use
 ‘ of them.

‘ It is observable at first Sight, that the Break
 ‘ consists of two main Parts, the one fix’d, the other
 ‘ moveable upon a Joint. Both these are in every
 ‘ other respect the same, compos’d of three thin
 ‘ Boards call’d Knives, and commonly made of
 ‘ Beach fram’d lengthways, and at small Distances
 ‘ from each other, into strong Pieces of solid Timber.
 ‘ These two similar Parts are placed the one above
 ‘ the other in the Break, the moveable Part upper-

† Vide Plate I.

L 4

‘ most,

' most, and in such a Situation that its Knives, when
 ' it is let down, fall into the Interstices or Distances
 ' between those of the fix'd or lower Part. This
 ' lower Part stands at a convenient Height above the
 ' Ground upon four strong Feet, and the upper is pro-
 ' vided with a Handle C to raise and let it down
 ' again. This alternate Motion breaks the Flax, which
 ' by the Weight and Action of the Leaver is forcibly
 ' pressed against the Knives, squeezed into the Inter-
 ' stices between them, thereby split, and disposed more
 ' readily to part with its Bunn in Scutching.

' From this short Description of the Instrument,
 ' and of its Action on the Flax, — 'tis obvious to
 ' collect, that the Distances between the Knives should
 ' not very much exceed the Thickness of the Knives
 ' themselves.—The Flax would then instead of being
 ' squeezed and split between them, be bruise'd only
 ' by their Edges, and as it often happens by bad
 ' Breaks, or the unskilful Use of them, cut through
 ' and made unfit for Use.

' The same evil Consequence would follow, if the
 ' Knives had Liberty to fall too far into one another.
 ' The Flax in that Case would drag, resist the Edges
 ' with great Force, and receive considerable Da-
 ' mage. 'Tis therefore carefully provided in well
 ' proportioned Breaks, that the solid Peice of Timber
 ' D, should reach down almost to the Edges of the
 ' Knives inserted in it, and stop their Descent in
 ' time.

' These are Cautions worth attending to, in the
 ' Make and Proportions of the Instrument.—In the
 ' Use of it there is another which deserves peculiar
 ' Notice, and has hitherto escaped our Dressers.

' 'Tis not the Stroke that breaks the Flax, more
 ' or less it always injures it, and where it is strong
 ' and smart, and the Flax does not give way imme-
 ' diately, it must inevitably cut it. The Experiment
 ' is easy—stretch the Flax tight over the Knives at
 ' A, then tie it that it may not yield, and two or
 ' three

three smart Strokes will snap it fairly. The squeezing of the Flax between the Knives, is the thing that breaks it.—The Pressure there is lateral, and tends to split the Harle, and not to cut it. It should therefore be the Intention of the Dresser, to make the Stroke as easy, and the Pressure as great as possible, and this the *Dutch* attain by a proper Position of the Flax.

'Tis well known from the first Principles of Mechanics, that in its fall the Leaver acts with more Velocity and greater Force at A then it does at B. That the Stroke there is incomparably smarter and more violent, and by the foregoing Observation has therefore a greater Tendency to damage and cut the Flax. On the other Hand, the Pressure there is least—ends with the Stroke,—and can neither be continued nor encreased. Hence when the Flax is placed at A, as our Dressers always place it, the whole Operation is perform'd in the most pernicious Way—without Pressure, which alone can split the Harle, and by Strokes continually repeated, which inevitably bruise and cut it.

The Reverse is true at B, the Stroke is weak and slow, and the Pressure—or to speak more intelligibly to some—the squeezing as great as possible. The *Dutch* therefore, in Opposition to our Practice, always break their Flax at B, stand with their Faces to the Joint, raise the Leaver with their Left Hand at C, and place the Flax and turn it under the Break as near as may be to the Centre of its Motion.

I have been more particular than usual in explaining the Mechanism of this Instrument, because I am afraid it has hitherto been little understood. Had our Dressers apprehended the Nature of its Action, and the only rational Intention of applying it to the Flax, they would certainly not have used it as they do—in a way, that in the strongest manner counter-acts all the Purposes of Flax-Dressing.

Indeed,

‘ Indeed, if the Method in use among us were more
 ‘ expeditious than the other, one might imagine our
 ‘ People had been tempted to break slovenly, in order
 ‘ to break quickly ; but as the very Reverse is true—
 ‘ and the *Dutch* bestow but three or four Strokes at
 ‘ most on each End of every Handful, while we toil
 ‘ at the same Quantity a tedious while—’tis impossi-
 ‘ ble to ascribe our Conduct to any other Cause,
 ‘ than a palpable Mistake of the End and Design of
 ‘ Breaking.

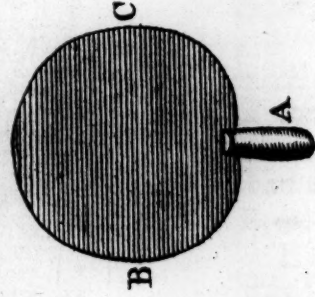
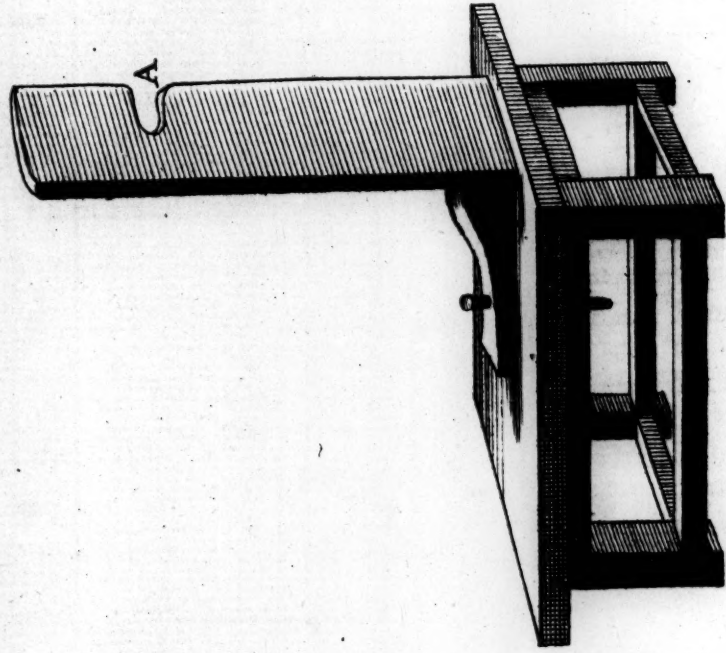
‘ I hope therefore to be excused for enlarging on
 ‘ this Head, and beg leave to repeat it to your Read-
 ‘ ers, that to break Flax is properly to split the
 ‘ Harle, in order to get out the Bunn—that this is
 ‘ performed by the Break, no otherwise than by press-
 ‘ ing the Flax between the Knives, and that there-
 ‘ fore bringing down their Edges with great Smart-
 ‘ nefs and Velocity upon it cannot answer the In-
 ‘ tention half so well, as a slow continued and strong
 ‘ Pressure, which can only be obtained in the *Dutch*
 ‘ Method.

‘ I shall conclude this Letter by observing, that
 ‘ whenever we use the Break as they do, we may then
 ‘ without any Danger make it considerably larger ;
 ‘ theirs are so, longer much than ours and weightier,
 ‘ and upon that Account work off more Flax in the
 ‘ same Time. As we use these Instruments at pre-
 ‘ sent, ’tis well indeed that they are light,—they do
 ‘ less Mischief than otherwise they would.—But as
 ‘ soon as we are pleased to imitate the *Dutch* Flax-
 ‘ Dresser in the Management, we may do it also in
 ‘ the Dimensions of his Break. It will perform
 ‘ more when it is larger, and do it safely when it is
 ‘ skilfully employed.

I am, &c.

R. M.

The Reader will be glad to know that he may see
 a *Dutch* Break among the Society’s Machines in the
 Vaults of the Parliament House. The Proportions
 between



J. Mynde sc.

between its several Parts are the same as in the Draught and its Length about four Feet.

N^o. XXXVII. *Tuesday, December 20th, 1737.*

GENTLEMEN,

‘ **W** H E N the Flax is sufficiently split by the
 ‘ Break, ’tis the Dresser’s next Business to
 ‘ clear it of the Bunn; this is done by Scutching,
 ‘ which is nothing more than beating the Flax down-
 ‘ wards and along the Grain, to loosen and throw
 ‘ off the broken Parts of the Bunn which still ad-
 ‘ here to the Harle.

‘ There are, however, in this easy Operation some
 ‘ Cautions worth attending to, and in our manner of
 ‘ performing it some Errors to be noted, which will
 ‘ engage me to be more particular in my Directions,
 ‘ than the Plainness of the Subject seems at first sight
 ‘ to demand; and to make them more intelligible,
 ‘ I have procured a Draught of the *Dutch Tools**,
 ‘ which differ considerably from ours, and are in the
 ‘ same Proportion better.

‘ I have frequently observ’d in the Course of these
 ‘ Directions, that the material Caution in Flax-Dress-
 ‘ ing, is to save the Harle from any violent Action
 ‘ on its Fibres, cross-wise, and athwart the Grain;
 ‘ and I have endeavour’d the more earnestly to incul-
 ‘ cate this leading Principle, not only as it contains
 ‘ an Epitome of the whole Art, but besides, and
 ‘ chiefly because it seems to have escaped our Dressers,
 ‘ who in some Degree or other counter-act it hi-
 ‘ therto in every Operation on their Flax.

‘ ’Tis indeed impossible in Breaking and in Scutch-
 ‘ ing, to prevent all Strefs of this pernicious Kind
 ‘ upon the Harle. — All that can be done is to
 ‘ lessen it as much as possible, and to direct the greater

* Vide Plate II.

• Part of that Pressure which the Flax must necessa-
 • rily undergo, laterally and along the Grain. But
 • this is itself a Motive to greater Care and more than
 • ordinary Caution—For since these Operations per-
 • formed with the utmost Nicety are still liable to
 • Danger, they cannot fail of being eminently hurtful
 • where they are attended with additional Disadvan-
 • tages from bad Instruments or the unskilful Use of
 • them.

• How little of this Caution appears in the Method
 • of Breaking which prevails among us, I had Occasion
 • particularly to consider in my last — and I hope the
 • Importance of the Subject will excuse me for being
 • equally particular upon the other Point at present.

• Our Dressers suspend their Flax over one Board,
 • and scutch it with another of a square or oblong
 • Form which carries a strait Edge, and is generally
 • very narrow. In this Method every Circumstance
 • is in some Degree an Error and attended with real
 • Evils, or at least with Inconveniencies. Above all,
 • the Make and Figure of the Scutch is destructive
 • in the highest Sense. — A Handful of Flax when it
 • hangs freely, as it does in Scutching, spreads itself
 • unequally; the Threads lye close and full towards
 • the Middle, thin and scattered at the Sides. — In
 • this State the several Parts of the same Handful are
 • in Strength very different from each other, and the
 • Middle will resist a Stroke which would snap all the
 • straggling Threads on either Side. However a
 • square or oblong Scutch strikes with equal Force
 • on every Part, and comes down upon the Sides
 • with the same Violence as on the Middle. The Con-
 • sequence is plain. Every Stroke tears the scattered
 • Threads it meets with, and as others spread into
 • their Place the next Fall of the Scutch snaps them,
 • and the Waste of Flax goes regularly on to the End
 • of the Operation. This alone were worth pre-
 • venting, but the Evil extends farther. — The Ends
 • of the Flax necessarily rise in Scutching, when a
 • strait

' strait Edge comes smartly down upon them. — If
 ' therefore the Instrument be narrow, — they lap
 ' themselves about it, resist the Stroke, and yield only
 ' as they break. That these are not imaginary Ob-
 ' jections to our Method, any one may be convinced
 ' by observing the Quantity of broken Threads
 ' which lye among the Bunn after this Operation.
 ' Some Part indeed of that Destruction may be a-
 ' scribed to the excessive Violence with which our
 ' Scutchers lay about them; perhaps a little to a few
 ' unguarded Strokes which now and then may light
 ' upon the Board over which the Flax is laid, and
 ' bruise the Harle between both Edges. But certainly
 ' the greater Portion of the Evil lyes where I have
 ' laid it, and proceeds from the improper Figure of
 ' our Scutches. Every Part of our Management is
 ' wrong, but that emphatically so.

' The *Dutch* however guard against every Inconve-
 ' niency together, and as it is their Wisdom never to
 ' neglect the smallest, — the last, how inconsider-
 ' able soever it may seem, has given rise to a Ma-
 ' chine delineated Figure first. — It consists of a thin
 ' Board with a large Notch, a Cut into one Side of
 ' it erected perpendicularly upon a Frame, which may
 ' be of any Shape, provided it have Weight to keep
 ' it steady. --- In this Notch they hang their Flax,
 ' which by that Situation is secured from the Danger
 ' of an unwary Blow: 'Tis impossible the Scutch
 ' should fall upon the Harle in that dangerous Posi-
 ' tion, where, as it is supported, it resists more forc-
 ' ibly and cuts also more readily. — Besides as conve-
 ' nient Instruments generally answer more Ends than
 ' one together, the Dresser's stroke is directed by this
 ' Machine, his Hand protected as he holds the Flax,
 ' and his Ease provided for by making it of such a
 ' Height that he can do his Business sitting.

' The other and greater Evils which attend our
 ' Method, the *Dutch* prevent by the Shape and Breadth
 ' of their Scutch, which as in Figure second is nearly
 ' circular,

' circular, and in Diameter little less than eighteen
 ' Inches. The greatest Force of such an Instrument
 ' falls exactly where it can do least Damage, — on the
 ' thickest Part of the whole Flax; since as the Dresser
 ' holds it by the Handle, A, its greatest Action is
 ' at B, or C, and exerts itself on the very Middle
 ' of the Handful. The Middle therefore, as it is the
 ' strongest, bears the Brunt of what little Stroke there
 ' is, --- for the *Dutch* do not beat the Harle with the
 ' unruly Violence of our unskilful People, and the
 ' loose straggling Threads about the Sides feel no
 ' Stress but curl gently round the Edges of the Scutch,
 ' and fall down again unhurt. 'Tis the same with the
 ' Ends of Flax which rise upon the Stroke, they can-
 ' not lap themselves about an Instrument of that Make
 ' and Size, but when they rise, rise against a broad
 ' well-polished Plane, occasion no Resistance, but
 ' drop back smoothly and uninjured.

I am, &c.

R. M.

Nº. XXXVIII. *Tuesday, December 27, 1737.*

GENTLEMEN,

' HAVING in my former Letters followed the
 ' *Dutch* Dressers in the Progress of their Opera-
 ' tions upon Flax, 'tis Time in this to return to the
 ' Seed, which becomes their next immediate Care.
 ' 'Tis true indeed that after Scutching, the Flax in
 ' *Holland* undergoes, as it does here, the Hackles, and
 ' besides, the Fining Mills which we are Strangers to
 ' in *Ireland*; but as this is a distinct and separate
 ' Trade and among them performed by other Hands,
 ' the common Dresser's Business with his Flax is
 ' over, and his Attendance now bestowed upon his
 ' Seed.

' This, your Readers will remember, was disposed
 ' of from the Ripples into stanch convenient Grana-
 ' ries,

ries, there laid up safely in the Boles, and air'd from Time to Time, to preserve it from Damps or other Injury. 'Tis necessary to add at present that these Floors are kept as dry as possible, and with the utmost Nicety protected from all Moisture, otherwise their Seed must be laid proportionably thiner to be safe, and occupy abundantly more room. --- Whereas by extraordinary Caution, the *Dutch* may allow themselves more Latitude in this, as the Dimensions of their Granaries and the Quantities of their Seed require it. --- However they seldom exceed four and twenty Inches, and choose to spread it thiner where they can.

The several Branches of Flax-Dressing mentioned in these Papers generally take up three Months --- So long therefore the Seed lyes by untouched, except an advantageous Market, as it sometimes happens, calls for greater Diligence. Then indeed the Flax is thrown aside and the Seed attended in the first Place, but the general Rule is otherwise, and in common Cases the Flax has the Precedence.

I mention this as an Instance of the *Dutch* Oeconomy which can never be too often recommended. The Seed receives no Damage by remaining in the Boles three Months, and the Winter Season which succeeds is as convenient for threshing as the best; in the mean While the Flax is ready drest and fitted for the Market without any Interruption or Delay. I have already observed that these Arts of husbanding their Time and doing Things in a regular Succession give the *Dutch* an Advantage over us not to be compensated; and which therefore they will certainly retain 'till we imitate their Conduct. --- I beg Leave to repeat the Observation --- and apply it to the Case before us. --- The several Branches of their Business are disposed in so natural an Order that no one interferes with any other, but each is carried on without Hurry. Their Flax by early sowing is fit for pulling by the Beginning of *July*, --- rippled by

‘ by the Middle or the latter End, — at the Height
 ‘ of the watering Season, — when the Flax ferments
 ‘ most kindly and most readily, — drawn again—
 ‘ and grassed sufficiently early in *September*, — and
 ‘ rough dressed by the Break and Scutches sometime
 ‘ in *October*: ’Till then in common Cases there is no
 ‘ great Demand for Seed. — Time remains sufficient
 ‘ to thresh and clean it before Spring, — at a Season
 ‘ of the Year when nothing else could be so well at-
 ‘ tended — and then this Business goes on speedily
 ‘ and smoothly without Avocation or Disturbance.

‘ In our Way — any Thing is done at any Time—
 ‘ as Caprice directs, or more generally as Necessity
 ‘ drives us on. — We have twenty several Things
 ‘ upon our Hands together, each of them an Impe-
 ‘ diment to every other, and all of them of Course
 ‘ done in a Hurry and by Halves.

‘ ’Tis indeed a main and general Reason of this
 ‘ Hurry, that every Dealer in Flax among us carries
 ‘ on three or four Trades at once. ’Tis not possible
 ‘ he should do his Business leisurely and in good Or-
 ‘ der, who is Husbandman, Flax-Dresser, Weaver,
 ‘ and perhaps Bleacher all at one Time; but with this
 ‘ leading Evil many others act as concurrent Causes
 ‘ — above all the imprudent Practice of stacking
 ‘ Flax and Seed together which throws the Care of
 ‘ both upon the Dresser at the same individual Instant
 ‘ divides his Industry, and by a necessary Consequence
 ‘ disturbs it. I have attacked this Practice upon other
 ‘ Principles before, but where there is no other Incon-
 ‘ veniency attending it, this alone, that it infalli-
 ‘ bly brings on two distinct Articles of Business, and
 ‘ each of them sufficient to employ the undivided
 ‘ Labours of a Family, is enough without any other
 ‘ Reason to explode it.

‘ ’Tis another Consequence of the same Practice
 ‘ nothing less pernicious than the former, that sepa-
 ‘ rating the Flax and Seed where they have been
 ‘ stacked together till the Spring, is generally per-
 ‘ formed

formed by common Threshing. There is not Leisure for tedious Operations — Rippling off the Boles and then pressing out the Seed. — Seasons will not wait, but when they call must be immediately obeyed: Dispatch is the only Thing considered, — and the quickest Methods must be used, however destructive to the Flax.

I don't know whether it be worth my While to prove that the Flail damages the Flax. It must occur to any one who has seen its Action upon Straw, that it cannot be otherwise. — When that has been severely thresh'd it is hardly fit for Use, and certainly an Instrument, which tears and cuts the one, must in Proportion also weaken and impair the other. — But this you will give me Leave to mention, that the Flail tosses and disorders it and entails double Labour on the Dresser when he comes to sort it afterwards. As also that this Instrument never threshes clean, and occasions a considerable Waste of Seed.

As the several Observations in this Paper have led me by Degrees to support the Practice of the *Dutch*, in laying up their Seed in Granaries till the Flax is drest, in Opposition to a Method which has of late prevailed among us — give me Leave farther to take Notice, that when their Dressers have Leisure to attend their Seed, they find in their close stanch Granaries the whole Quantity that they there deposited. 'Tis true the ripest Boles where the Flax has not been pulled too green open and shed their Seed, but it lyes securely on the Floor, and is as safe without the Bole as it could have been within it. In our darling Method of stacking Flax unrippled whatever sheds is lost: The ripest driest Boles come empty to the Barn while the best and finest Seed is rotting in the Haggard.

Having sufficiently, I hope, justified the Practice of the *Dutch*, — laying up their Seed in Granaries, — 'tis now Time to bring it out in order to separate it from the Boles and clean it. In the latter,

‘ as they are nicely curious, so I intend to be particu-
 ‘ lar, and therefore reserve all Directions on that Head
 ‘ to be laid together in my next. This Letter I shall
 ‘ conclude by a short Account of the former Opera-
 ‘ tion, which requires no Comment or Enlargement.
 ‘ The Boles are broke by Horses drove over them
 ‘ as they lye three Feet deep or thereabouts, upon an
 ‘ even Floor paved with Brick or Stone. Sometimes
 ‘ to make more Haste they drag an heavy Cart be-
 ‘ hind them ; at other Times they work alone hood-
 ‘ winked, tied Head and Tail to one another in a
 ‘ Circle. In either Way the Operation is the same,
 ‘ and that they may not injure it, they and the Cart
 ‘ when it is used are equally smooth-shod.

‘ This is sufficient on a Practice which includes no
 ‘ Difficulty, I shall only add, that on a smooth hard
 ‘ Floor, I have tried an heavy rolling Stone with
 ‘ very tolerable Success. — I am, &c.

R. M.

Nº. XXXIX. Tuesday, January 3d, 1738.

GENTLEMEN,

‘ **A**S there is no Crop that suffers more from
 ‘ Weeds, ’tis of great Importance in Flax-
 ‘ Husbandry to cleanse the Seed from pernicious Mix-
 ‘ tures of all foreign ones. The *Dutch* accordingly
 ‘ are remarkably curious in this Point — neglect no
 ‘ possible Caution, and stick at no Expence. I pro-
 ‘ mised in my last to lay before your Readers a di-
 ‘ stinct and particular Account of the Method they
 ‘ pursue ; and to do it in the Compass of one Paper,
 ‘ ’twill be necessary to husband every Part of it. I
 ‘ shall therefore confine my self strictly to my Task
 ‘ and make no other Observations on the Subject but
 ‘ such as arise out of it immediately, and conduce di-
 ‘ rectly to give a clearer Notion of their Manage-
 ‘ ment,

and in all Countries and all Cases is the chief
 current in cleaning seeds, as they are every one
 am invariably heavier than the Coats, Hanks
 les, in which they are contained, the fan
 is applied to both of them to different Di-
 as in proportion to their Weight, and conse-
 ly parts them. It is however true, that Win-
 is generally is an instrument attended with
 many inconveniences. It blows not constantly
 properly discharges the chaff in his Time
 rest Seed — when it does, it is not always
 in Direction to answer the Situation of the
 — and without Doors, except it be attended
 by Weather, its empty wheels to his Pu-
 blishes, when its Force can be applied in
 it Way, its even then, for equal, but gene-
 by hidden Blasts, which are well known
 by the whole Work, and occasion a consider-
 able Seed.
 and these Inconveniences — The Disk
 Machine, described Fig. 1, which
 Work, uniform and steady in its
 and ready command.
 which by its circular Motion on
 a Wheel, in such proportion to
 with which it moves, and therefore
 a great force, as the wheel finds conve-
 nient.
 A Fan is enclosed in a box or Case, K,
 occupies one half of it, separately de-
 and in a different View in Fig. 2. It is sup-
 ported on its Axis and turned by the Handle,
 a other half of the box is empty and receives

Plate 3 p. 163.

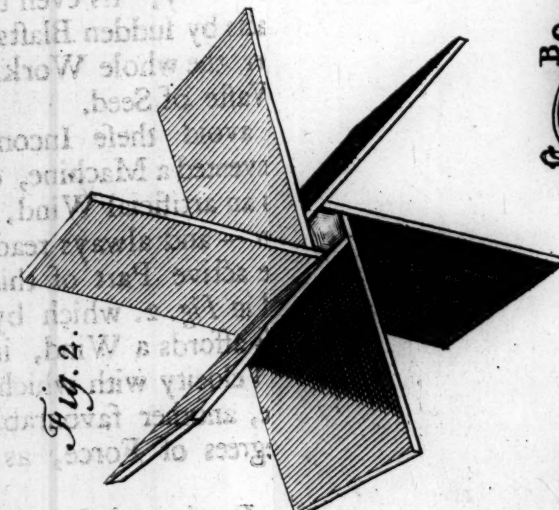


Fig. 2.

Fig. 1.

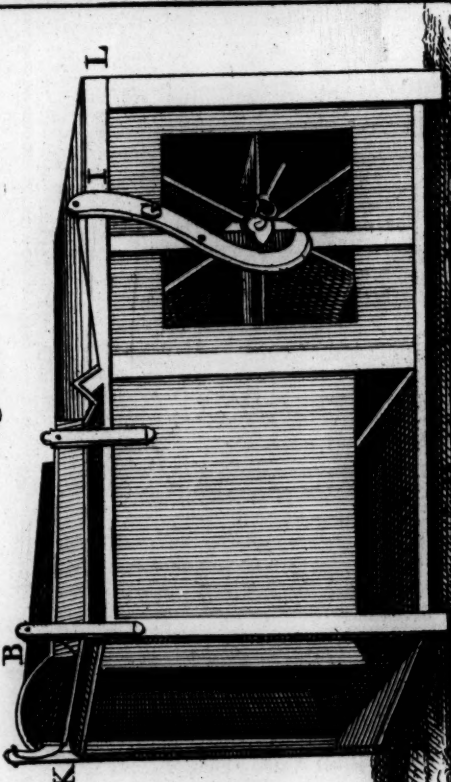
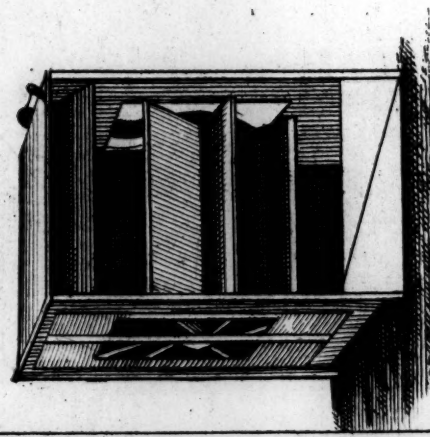


Fig. 3.



J. Mynde sc.

ment, and of the several Purposes intended by the several Parts of it.

Wind in all Countries and all Cases is the chief Instrument in cleaning Seeds, as they are every one of them intrinsically heavier than the Coats, Husks or Boles, in which they are contained; the same Force applied to both carries them to different Distances in Proportion to their Weight, and consequently parts them. 'Tis however true, that Wind acting naturally is an Instrument attended with a great many Inconveniencies. It blows not constantly, and frequently disappoints the Dresser in his Time of utmost Need — when it does, it is not always in the best Direction to answer the Situation of his Barns — and without Doors, except it be attended with fair Weather, 'tis entirely useless to his Purpose — Besides, when its Force can be applied in the best Way, 'tis even then not equal, but generally acts by sudden Blasts, which 'tis well known disorder the whole Work, and occasion a considerable Waste of Seed.

To avoid these Inconveniencies — The *Dutch* have invented a Machine, delineated *Fig. 1.* * which creates an artificial Wind, uniform and steady in its Action — and always ready at Command.

The active Part of this Engine is a Fan, described in *Fig. 2.* which by its circular Motion on its Axis affords a Wind, in Strength proportionable to the Velocity with which it moves, and therefore capable, another favourable Circumstance, of several Degrees of Force, as the Dresser finds convenient.

This Fan is enclosed in a large Box or Case, K, L, and occupies one Half of it; separately described, and in a different View in *Fig. 3.* It is suspended freely on its Axis and turned by the Handle, A. The other Half of the Box is empty and receives

the Seed as it falls from the Hopper B, on a sloping Floor visible at C. Along this the Seed slides out of the Machine at D, while the Boles and lighter Dirt are carried out by the Violence of the Wind at E.

This is a general Account of the Operation.—

The Fan creates a Wind more or less violent at the Discretion of the Dresser. This Wind acts forcibly as it is confined within the Winnow, and always in the same Direction — lengthways of the Machine from A to E. In its Passage it meets the Seed constantly falling from the Hopper, and impels it towards E; nearer or farther from it according to the Weight of it: Good Seed however never goes so far as the End of the Machine, it comes down within the Box, and the empty Boles and rotten Seed are carried out together strait before the Wind.

This would be sufficient — were it not that the Contrivance of the Hopper is ingeniously calculated to save Labour, and upon that Account deserves some Notice. It hangs by Strings upon four Pegs and moves with little Force, which may therefore, without any Strefs upon the Workman, be communicated to it by the same Hand that moves the Fan. To this Purpose a triangular Board, F, is fixed upon the Handle of the Fan and turns along with it. The Angles of this Board in their Rotation press against the lower End of a little Lath incurvated, as in the Figure, which moves freely upon a Peg at G. This End accordingly recedes from the Pressure towards H, and consequently the upper End moves the contrary Way to I, and by a String that ties them both together draws the Hopper after it, out of its natural Situation. When this Pressure ends and the Sides of the little Triangle are next the Lath, the Hopper hangs freely, returns to its former Place, and takes the Lath along with it till the next Angle of the little Triangle begins to act, and so alternately as long as the Fan moves.

‘ I need not add, that as the Hopper is thus in continual Agitation, the Seed sheds down and supplies the Fan. The Thing is too obvious to be told.

When the Seed is well separated from the Boles by going through this Engine as often as Need requires, the next Care is to cleanse it from all foreign Bodies, which from their Weight could not be carried off by the Action of the Wind. The *Dutch* begin by the larger Kind, such as Stones, Clods of Earth, and especially Pods of Seed or Roots of Plants. These are got out by letting the Flax-Seed through a Sieve, whose Holes it can run through with Ease, while Bodies of a larger Bulk are retained and thereby separated from it.

‘ This Operation is soon over, but as it does not answer perfectly in removing all noxious Seeds even of the larger Kind, it is succeeded by another to complete what the former has begun. The Sieve made Use of now has its Holes of an oval Shape, and of a Size just sufficient to let through the finest and largest Flax-Seed. To the oval Passages, Seeds of a different Make cannot accommodate themselves, and except they be considerably smaller than the Dimensions of the Holes, those are retained in this second Operation which had escaped the former.

‘ Small Seeds still remain among the Flax-Seed, which is therefore put once more into a Sieve, but of a different Make and to a different Purpose. The Holes in this are adapted only to let out the smaller noxious Seeds, which had gone through the former Operations with the Flax-Seed, and are sifted out in this while the latter is retained.

‘ After all this Care the *Dutch* go one Step farther, and make Use of the Wire-Harp or Screen. In this, as the Flax-Seed falls slowly from the Hopper, it slides gently down the sloping Plane, and in its Motion throws off all Dust and every other noxious Mixture. Stree, Fairy-Flax, and other hurtful Seeds slip through between the Wires, and are se-

‘parated from the Flax-Seed, which after this necessary Operation, is then at last as clean as Art and Industry can make it.’

I am, &c.

R. M.

Our ingenious Correspondent has probably neglected to procure a Draught of the Wire-Harp, from an Opinion that the Shape and Make of it were sufficiently known among us; the Mault-Screen, an Instrument in common use, being so very like it, that they differ in nothing more than in the Closeness of the Wires, which lye at smaller Distances in the Wire-Harp than in the other. However, and for fear any of our Readers should want farther Information, we think it necessary to apprise them, that there are among the Society’s Machines a Flax-Screen, in its full Dimensions, and a small Model of the Winnow mentioned in the Beginning of this Letter.

Nº. XL. *Tuesday, January 10th, 1738.*

GENTLEMEN,

‘I Mentioned in one of my former Letters a Trade
 ‘carried on separately in *Holland*, and distinguish’d from common Flax-Dressing as it is generally understood, and manag’d in this Kingdom,
 ‘by the Name of fine Flax-Dressing. This Trade
 ‘consists only of two Branches, fining the Flax and
 ‘hackling it; and yet affords abundant Employment for many Hands, and is attended with sufficient Profits, to be made a distinct and peculiar Business. The former Branch of this beneficial Occupation we are Strangers to entirely, and the latter is performed among us in so slovenly a way, that in effect we have it yet to learn. I shall therefore be particular in both, and deliver my Directions

‘ tions to the Dresser fully and minutely, as those
 ‘ should always be conceiv’d, which are design’d to
 ‘ introduce Practices entirely new.

‘ Fining Flax is in other Words splitting the
 ‘ Harle into its smallest Fibres; and is an Operation
 ‘ supplemental to the Action of the Break, which
 ‘ splits the Harle indeed, but clumsily, and parts only
 ‘ the first and grossest Threads. ’Tis performed by
 ‘ an Engine, which I beg leave to call a fining Mill,
 ‘ and which hereafter shall be particularly described.
 ‘ The *Dutch* are in Possession of this Engine, and
 ‘ have applied it to the Purpose of Flax-Dressing, as
 ‘ far as I could learn, from the Infancy of the Linen
 ‘ Manufacture, and ’tis certainly a Matter of Surprise
 ‘ that the Use of it has been so long concealed from
 ‘ us. For what reason, and from what extraordinary
 ‘ Motives so material a Circumstance should be ob-
 ‘ stinately overlooked, ’tis not easy to conceive, nor
 ‘ am I willing to enquire; true it is that no Direc-
 ‘ tions hitherto publish’d mention it, and that our
 ‘ Practice shews, in too many pernicious Instances,
 ‘ that the Knowledge of it has never reach’d this
 ‘ Country. Nothing has so much retarded the Pro-
 ‘ gress of the Linen Trade in *Ireland* as the mis-
 ‘ chievous Custom of pulling our Flax green. This,
 ‘ among many more Particulars, can be ascrib’d to
 ‘ nothing else than our Ignorance of fining Mills,
 ‘ which is unquestionably the true and genuine Source
 ‘ of that prevailing Error, and the leading Failure
 ‘ in our Management.

‘ It were too hard a Censure on our Dressers to
 ‘ imagine, that they wantonly threw away their Seed,
 ‘ and prefer’d green and consequently weak Flax
 ‘ without any Hopes of Compensation. They were
 ‘ unwarily misled by a receiv’d Opinion, which the
 ‘ fining Mills alone could effectually confute, that
 ‘ full grown Flax could not by any Management be
 ‘ wrought up to a fine Staple. By this Opinion they
 ‘ proceeded, and looking upon Strength and Fine-

ness as inconsistent Qualities, sought the latter in green Flax to the Detriment of the Manufacture. As this was certainly the Motive of their Conduct, so it is the only Apology that can be made for it. If Strength and Fineness can be had together, there is no need of Argument to recommend the Method that procures them, and it cannot be supposed, that whenever their Consistency is fairly and experimentally made out, any should be found so destitute of common Sense as to choose either singly.

I hope it will not be expected that I should waste my own and your Readers time, in proving by elaborate Arguments that Flax, as every other Vegetable, is then strongest when it is thorough ripe. The thing is certain, and in the vegetable Oeconomy, as well as in the animal, Maturity is requisite to give the several Parts their greatest Strength and Toughness, and to harden the Gristles into Bones. But how the Fibres, which certainly grow coarser as they increase in Strength, may yield Threads of equal Fineness with those of greener Flax, may deserve some Illustration.

To clear this Point I must desire your Readers to observe, that the Harle consists of longitudinal Fibres tied together by little Ligaments or Membranes. That these Fibres are themselves composed of smaller Fibres united by lesser Ligaments, and that these again are a System of small Threads, which have also their constituent Threads or Fibres joined in the same Manner. This regular Succession of component Fibres goes on beyond the Reach of Thought or Imagination, and in the Language of Mathematicians to Infinity, and consequently how fine soever you suppose any given Fibre, 'tis in Effect a Bundle of other Fibres, and may be still unfolded into Threads of a finer Texture. Hence it becomes unquestionably plain, that the coarsest Flax, whose first component Fibres are of the largest Size, contains however Fibres of some

' some other Order, of too nice a Make for any Ar-
 ' tificer to use, and not to be wrought by human
 ' Skill. The finest therefore we can want may be
 ' found in the ripest, strongest, coarsest Flax, pro-
 ' vided we had Ingenuity to split it, and Machines
 ' properly contriv'd to unfold the several fibrous
 ' Systems of which it is compos'd, without injuring
 ' or breaking the small constituent Threads. How
 ' far Art can go, and what may be performed by
 ' Machines, Experience only can determine; I would
 ' not therefore be understood to mean, that the coarsest
 ' Harle yields in Fact the finest Fibres we can
 ' use. I have no Warrant from Experiment to proceed
 ' so far in my Assertion, and 'tis possible there
 ' may be a Harshness in some Flax to prevent its
 ' splitting easily, and dispose it to snap under the
 ' Engine, when its Action is forcibly exerted, or
 ' any Time continued. My Design in the foregoing
 ' Observation has been only to remove all Prejudices
 ' against the use of ripe strong Flax, by shewing
 ' from the very Make and Structure of it, that
 ' it may receive an artificial Fineness from Machines,
 ' and to prepare the Way for what I now assert,
 ' that by the Help of those in *Holland*, the same
 ' Flax is commonly improved in a Degree incredible
 ' to those, who have not sufficiently attended
 ' to the curious Texture of that Plant.

' 'Tis not easy exactly to determine to what degrees
 ' of Fineness Flax arrives, or to ascertain in what
 ' Proportion it splits in going through the Mills.
 ' But I believe the most obstinate among us will
 ' allow, it receives benefit sufficient to prevent
 ' all necessity of pulling green, when I have assured
 ' them from undoubted Facts, and my own Knowledge,
 ' that the fine Flax-Dresser, who in *Holland* buys
 ' his Flax ready broke and scutched, sells weight
 ' for weight again, from the Fining Mills and
 ' Hackles, at nine times the Price at which he
 ' bought.

' No

‘ No Body will understand me of whole Parcels
 ‘ —I mean that of such Flax as he can purchase by
 ‘ the Stone at five Shillings, for Instance, ready
 ‘ scutched—He afterwards can sell a Stone of the finer
 ‘ Part for two Pounds five Shillings—From the Dif-
 ‘ ference of the Price, we may judge of the Dif-
 ‘ ference of the Staples; and when that is equitably
 ‘ estimated, I am willing to leave it to your Readers,
 ‘ whether for the future we should look for Fineness
 ‘ in green Flax, to the Loss of all our Seed, or be-
 ‘ stow it on the ripest and the strongest by the use
 ‘ of proper Engines, which, as shall be seen hereafter,
 ‘ require but little Labour or Expence.’

I am, &c.

R. M.

No. XLI. *Tuesday, January 17th. 1738.*

GENTLEMEN,

‘ **T**HE Advantages which attend the Use of
 ‘ Flaxing Mills in *Holland*, and which I could
 ‘ wish to transplant into this Kingdom, are not con-
 ‘ fined to the one mentioned in my last. ‘Tis in-
 ‘ deed the most considerable, as it is also the most
 ‘ obvious, and that which results most naturally from
 ‘ the Make and Texture of the Flax; but the rest, tho’
 ‘ something more remote from Observation, and per-
 ‘ haps of less Importance to the Manufacture in
 ‘ themselves, are however of sufficient Moment to
 ‘ deserve any Illustration I can give them.

‘ From the short Account in my last Letter of
 ‘ the constituent Parts of Flax, it cannot fail to oc-
 ‘ cur to every Reader, that, upon the splitting of the
 ‘ Harle, the little Ligaments or Membranes which
 ‘ connect its Fibres break in the Operation; since
 ‘ it is evidently plain, that till these snap by the Pres-
 ‘ sure of the Engines the Fibres cannot recede con-
 ‘ siderably from one another, much less separate in-
 ‘ stitely. ‘ These

‘ These broken Ligaments however adhere, like
 ‘ so many little Rags, to the Sides of the Threads or
 ‘ Fibres, and constitute that fuzzy downy Substance,
 ‘ which is plainly observable about them.

‘ This, where it is not removed, shews itself after
 ‘ spinning in the Yarn, and even after weaving in
 ‘ the Cloth; gives both a rough and disagreeable Ap-
 ‘ pearance, and takes off greatly from their Value.

‘ Our Manufacturers, though unacquainted with
 ‘ the Cause, are but too sensible of the Effect. They
 ‘ find this Fuzziness in their finest Cloths unconquer-
 ‘ able, and look with Envy on the Skin of the
 ‘ *Dutch* Linens, which they cannot imitate even at a
 ‘ Distance in their own. I am not ignorant that
 ‘ some among us have sought for Remedies to this
 ‘ Evil, in higher Dressings, which lay the downy
 ‘ Substance for a Time; that it has been charg’d by
 ‘ others upon loose and careless Spinning; but from
 ‘ the Make and Texture of the Plant, ’tis evident the
 ‘ Evil lyes exactly where I now have laid it, and
 ‘ consequently admits no Cure, but by rubbing of
 ‘ those ragged Membranes, which in Defiance of all
 ‘ Art will disfigure the Flax, the Yarn, and the Cloth,
 ‘ till they are totally removed.

‘ High Dressings may indeed glue them down up-
 ‘ on the Cloth, and prevent their Appearance to the
 ‘ Eye; but the first Washing set some at Liberty a-
 ‘ gain, and every succeeding Washing more. Less
 ‘ still is to be expected from the Spinner in this
 ‘ Point; the broken Ligaments are too short to be
 ‘ wrought by any Art into the Yarn. They afford
 ‘ the Twist no Hold, and start from it, at the Instant
 ‘ that the Pressure of the Finger ceaseth. The only
 ‘ rational Attempt is to get rid of them entirely, and
 ‘ to lop off those Excrescencies, which no Skill or
 ‘ Industry can otherwise subdue.

‘ This the Fining Mills effectually accomplish, and
 ‘ at the same Time that they split the Harle, rub
 ‘ off the Ligaments, which the Break can only tear.

‘ How

• How the Operation of these Engines answers both
• Ends at once, requires a thorough Notion of them
• to explain. I shall therefore do no more at present
• than assure your Readers, that Flax improv'd by
• the Action of the Fining Mills affords to a good
• Spinner Yarn as smooth, as tight and smart as a
• Hair Fishing-Line, though examined by a magni-
• fying Glass. I need not add, that this Excellency
• holds afterwards also in the Cloth. The Thing is
• obvious, and some of more Importance remain still
• to be observed.

• Harshness, as it is generally call'd, seems to be
• a Defect in Flax, much talk'd of and little under-
• stood, and is generally and indifferently ascribed
• to every Kind of it, which proves stubborn and
• unpliant, and yields uneasily to the Intention of the
• Artist. 'Tis however certain that this Effect may
• rise from different Causes. Sometimes Harshness
• is only another Word for Coarseness, which, like the
• former, makes the Flax work clumsily, and refuse
• a ready Obedience to the Hand. In other Cases it
• may possibly imply a wrong Conformation of the
• Fibres, an Unevenness and Roughness in their Tex-
• ture, which disappoints the Manufacturer's Endeav-
• ours, and foils his Skill and Industry; but more
• frequently, if I mistake not, it denotes the plain and
• natural Effect of a Cause little suspected in the Case,
• and which, as far as I can find, has not hitherto
• been thought of. When the membranous Liga-
• ments already mention'd adhere in any Quantity
• to the Threads or Fibres of the Harle, they rub
• against one another, and occasion a considerable
• Friction in Spinning first, and afterwards in every
• subsequent Operation. Hence it is most commonly
• that our Flax is so untractable; those numerous
• Excrescencies stick, and fret, and drag under the
• Artist's Finger. The Fibres take the Twist un-
• kindly and with Labour, and after all neither lye
• so close and tight together, nor work so true and
• evenly.

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• evenly. This Account of Harshness stands to
 • reason, and is besides confirmed by Experience.
 • The same Engines, which remove that fuzzy downy
 • Substance on the Flax already mentioned, remove
 • at the same Time all Stubbornness and Harshness;
 • these therefore depend on the same Cause, as they
 • admit of the same Remedy, and are both Effects of
 • the little broken Ligaments adhering to the Harle.
 • All these, as it has been observed above, are rub'd
 • off by the Action of the Fining-Mills, which pro-
 • cure thereby a third Advantage to the Manufac-
 • turer, and bestow an unusual Softness on his Flax;
 • and this, I can assure your Readers, in a Degree not
 • easily conceivable, by those who are unacquainted
 • with the Use of them.

• I have chosen to introduce the Description of the
 • Fining-Mills by some Account of their Usefulness
 • and Excellency, to engage the Attention of your
 • Readers. This is the first publick Mention that
 • has been made of them, and some might possibly
 • suspect, that a Machine so long concealed had not
 • much to recommend it, and was neglected rather
 • than unknown.

• To remove this Prejudice, I have endeavoured to
 • support by Argument, what I have seen of its good
 • Effects in *Holland*; and to prove from the Make
 • and Texture of the Harle, that it is capable of
 • those Improvements, which the Manufacturer a-
 • mong us is in these Letters encouraged to expect.
 • This has led me into some Observations and Re-
 • flections more philosophical perhaps, than agrees
 • at the first View with the main Intention of your
 • Papers, the Instruction of the meaner Sort; but as
 • this is a Case of great Importance, and all Practices
 • entirely new must obtain Admittance and receive
 • Encouragement, especially from Gentlemen, I have
 • thought my self at liberty to go for once out of the
 • common Road, and address particularly the more
 • knowing of your Readers. If I have any Ways
 • succeeded

' succeeded in this Attempt of convincing them, and
 ' conveyed the same Opinion of the Fining-Mills to
 ' them which I entertain my self, they'll be glad to
 ' find in my next Letter an exact Description of their
 ' Structure, and some Account of their Action on
 ' the Harle. In the mean Time I shall dismiss them
 ' by observing, that the Advantages, which accrue
 ' from the Operation of these Mills, extend through
 ' every Branch of the Linen Manufacture, and are
 ' multiplied into many more as the Flax proceeds
 ' through the Wheel, through the Loom, and through
 ' the Bleaching-Green. Fine, smooth, soft Flax lyes
 ' close and even in the Yarn, works in the Linen
 ' tight and true, and bleaches equally and well; or
 ' to speak the same in other Words; fine, smooth,
 ' soft Flax, and which has Strength sufficient, has all
 ' the Perfections Flax can have, and is fit for every
 ' Purpose.

I am, &c.

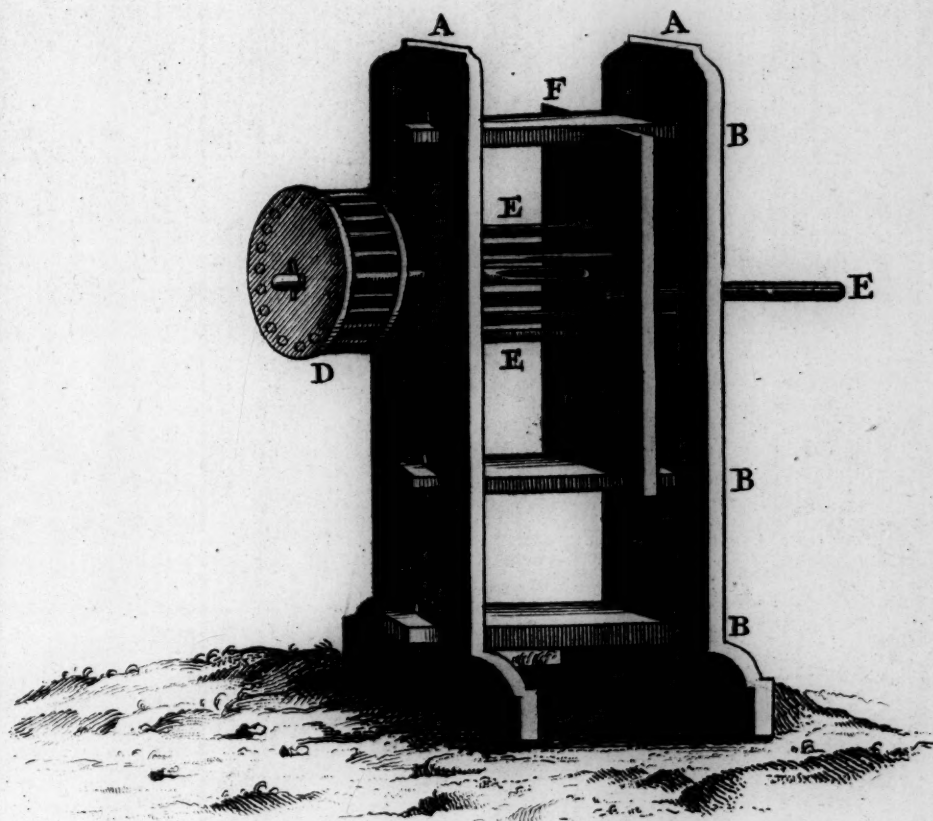
R. M.

N^o. XLII. *Tuesday, January 24th, 1738.*

GENTLEMEN,

' **T**HE Fining-Mill, * which I have promised
 ' to describe in this Letter, consists of several
 ' Parts, some of which are absolutely requisite to its
 ' Action, and others intended only to give the former
 ' their full Play, and to make them work commodi-
 ' ously. This Distinction is in all Machines a neces-
 ' sary one, that the Reader may the better be apprised,
 ' where he must adhere strictly and closely to his Mo-
 ' del, and how far he is at Liberty to recede from the
 ' Draught before him, without forfeiting the Benefits
 ' accruing from the Engine.

* Vide Plate IV.



J. Mynde sc.

‘ In the Fining Mill the moveable Spindle C, and the Cylinders or Binders E, disposed circularly about the former, as their Axis, are the necessary Parts. The Frame and the Wheel are arbitrary ones, may be changed at pleasure, and varied into any form which will admit of easy Motion in the Spindle, and a circular Position in the Binders.

‘ However, as the *Dutch* Machine is certainly contrived in the plainest, cheapest, and most commodious Manner, I shall in this Description copy from theirs exactly, and recommend it to the Readers in all its Parts without Distinction.

‘ The Frame, as it is observable in the Draught, is composed of two strong Planks A A, standing perpendicularly upon the Floor, and retain’d in that Position by three horizontal Boards mark’d severally in the Figure with a B. These are designed to give Steadiness to the whole Engine, and should therefore be strong and tight, not to yield in the Operation, which is attended with more Stress upon the Frame, than an uncurious Observer would expect.

‘ Two of these, the uppermost, besides the use common to them all, serve another Purpose, and receive a third perpendicular Plank F, moveable between them, and therefore called a Slider. This Plank should be inserted in the Frame as tight as possible, and compressed as strongly, that in sliding along the Boards it may retain its erect Position, and be carried forwards and backwards as Occasion serves, parallel always to itself. From the Destination of this Slider, which shall be explained below, it is acted upon with considerable Force when the Machine is set a going. It should therefore be proportionably strong and firm, and as tough as any Part of the whole Engine.

‘ The Frame thus finished; the two Planks A A, and the Slider F, are bored through severally, and in the same horizontal Line, to admit an Iron
‘ Spindle

‘ Spindle C, inserted at one End in the large Wheel
‘ mark’d D.

‘ Round this Hole are disposed in an exact Circle
‘ eight other Holes, to receive the Binders E, which
‘ are nothing more than wooden Cylinders of an
‘ Inch Diameter, which like the Spindle run hori-
‘ zontally through the whole Frame, go in at either
‘ of its Sides, and proceed through the Slider to the
‘ other.

‘ ’Tis not necessary to describe the Wheel, and I
‘ have left it to the Choice of the Engraver to an-
‘ nex any kind he pleas’d to the Spindle in the
‘ Draught. The Make and Size of it depend en-
‘ tirely on the Power applied to this Machine, and
‘ must be of a different Structure, as it is intended
‘ to be mov’d by Wind or Water, by Horses or by
‘ Hand. One thing only will require to be ob-
‘ served, that the Movements must necessarily be con-
‘ trived to turn the Wheel two different Ways, from
‘ the left Hand to the right, and back again from
‘ the right Hand to the left. Without this the Ope-
‘ ration can’t proceed—as will appear by the short
‘ Account of it with which I shall now conclude this
‘ Paper.

‘ To understand this clearly, the Reader must be
‘ first appriz’d that the Iron Spindle has an Eye
‘ which extends from End to End of it, and is plac’d
‘ in an horizontal Situation, when the Engine is to
‘ receive the Flax. Through this Eye the Dresser
‘ runs his Flax divided into little Bundles, as it is
‘ generally imported into this Kingdom. Each of
‘ these is separately inserted, and alternately from
‘ right to left, and from left to right. Hence when
‘ the Spindle is loaded with its Complement, six
‘ Pounds *Dutch* or thereabouts, the Ends of all these
‘ little Bundles are regularly and equally disposed on
‘ either Side of it. These Ends drawn out about
‘ three Inches are tied over the Spindle, each of them
‘ to its next Neighbour on the other Side, and the
‘ Flax

* Flax thus fastened, lapt about it half one way and
* half the other.

* 'Tis plain, that to load it in this Manner, the
* wooden Cylinders which surround the Spindle
* must be drawn out of the way, as one of them is
* represented in the Figure; but when that is over,
* they are forced back to their former Situation to
* compress the Flax, and then the Wheel begins to
* move, and the Machine is set a going.

* If upon trial the Flax is not sufficiently confin'd,
* or if it be the Intention of the Dresser to give it all
* the Fineness which the Engine can bestow, the Sli-
* der already mentioned and described is then of use,
* and brought forward on the Spindle, contracts the
* Space which the Flax occupied before, and drives
* it forcibly under the Binders; and as in this Posi-
* tion it bears the whole Pressure of the Flax, 'tis ob-
* vious, as I have observ'd above, that it should be
* very strong and firmly inserted in the Frame.

* If I have succeeded hitherto in conveying to your
* Readers a clear Notion of the several Parts of this
* Machine, and the Position of the Flax, they will
* readily apprehend at present that when the Spindle
* turns, it draws no more than one half of the little Bun-
* dles after it close lapt about it, and strongly compress'd
* between the Binders; while on the contrary, the other
* half is unlapp'd by the same Motion, riseth between the
* Binders, and resists the Action of the Spindle. 'Tis
* therefore necessary that the Wheel should move re-
* gularly and alternately one way first, and then the
* other, that the Bundles may undergo successively
* the several Parts of the Operation, rise between the
* Binders, and then be stretch'd round the Spindle.
* Either of these singly would answer the End im-
* perfectly, together they split the Flax, open its Fi-
* bres, and, if I may be allowed the Expression, po-
* lish them.

* I cannot compare this Operation to any thing in
* use among us, which can give a distinct Notion of

‘ it. Those however will understand it pretty well
 ‘ who shall conceive of it, as something not unlike
 ‘ rubbing of Flax forcibly between their Hands :—
 ‘ As that would do, it splits it, and by an alternate
 ‘ Motion the same in kind, though stronger and
 ‘ more commodious than the former, rubs off all Ex-
 ‘ crescencies, and makes it smooth as well as fine.

‘ What I have said of its Advantages already
 ‘ will excuse me from recommending this Machine
 ‘ at present ; I shall therefore conclude abruptly, by
 ‘ observing that the *Dutch* turn the Wheel successive-
 ‘ ly twice one way, and twice the other ; and that
 ‘ fourscore of these double turns each way advance
 ‘ Flax to the greatest Fineness it can receive from
 ‘ Art.

I am, &c.

R. M.

From the trial made of Fining Mills, since the first Publica-
 tion of these Letters, we are able to assure the Reader that they
 fully answer all the purposes assigned them by the ingenious Au-
 thor ; with this additional Advantage, That by the use of them
 the Colour of the Flax is considerably improv'd.

N°. XLIII. *Tuesday, January 31st, 1738.*

GENTLEMEN,

‘ **I** T might be an Occasion of Surprise to some,
 ‘ should I proceed to give Directions about Hack-
 ‘ ling without taking previous Notice of the Beetles.
 ‘ I beg leave therefore to inform your Readers that
 ‘ the Use of them is perfectly unknown in *Holland*,
 ‘ and that wherever the Fining Mills are introduced
 ‘ there can be no Occasion for them. Those who
 ‘ have well considered the only possible Design of
 ‘ Beetling, and observed what has been said of the
 ‘ Purposes intended by the Fining Mills, must be
 ‘ sensible that the Ends pursued in either way are per-
 ‘ fectly the same, and that therefore the Introduction

of the latter entirely supercedes the former ; which is indeed no more than a clumsy and a lame Expedient to do that imperfectly, with immoderate Labour and Expence, which the Mills perform expeditiously and neatly, easily and at little Cost.

I shall not detain your Readers with Arguments and Illustrations to prove so plain a Point. The strongest Prejudice may be trusted in this Case where the Advantages lye all on the same Side, and shew themselves so readily that they cannot be mistaken. 'Twill be more useful to proceed to the Observations upon Hackling, with which I shall conclude at the same Time this Letter, and my Directions to the Flax-Dresser.

Every Body knows that Hackling is designed to open and part the Fibres which were split in the foregoing Operations, and to separate the Tow, the shorter, coarser, harsher Threads, from those which are properly called Flax, the longer, the finer, and the softer. To convey the clearest Notion of the whole Performance, and the Ends intended by it to the Reader, I should choose to call it combing. The Hackles act exactly like so many Combs, and perfectly to the same Purposes, to throw off all foreign Bodies, all damag'd broken Fibres, to untangle and part the rest, and to lay the whole Parcel neat and smooth.

'Tis a plain Consequence of this Analogy, that as in Combing, so in Hackling, nothing is more pernicious than Violence. A Hackler who lays about him with unruly force makes Tow as fast as he removes it ; breaks every Thread that is any ways engaged among the rest, and frees it only by destroying it. Upon this Account, it has always been to me matter of great Surprise, to see strong brawny Fellows trusted with an Instrument, which requires the lightest Hand and gentlest Touch, and should be applied to Flax with the utmost Care and Tendernefs. In *Holland*, they reserve the Use

of it to their Women and their Children, and I believe 'tis an Absurdity peculiar to ourselves to assign robust and able Men a Task, which they can't perform to Purpose till they disuse their Strength and Vigour, and learn an artificial Weakness.

I have ventured upon a coarse Comparison to explain Hackling to your Readers, because I know no other so natural and proper; give me Leave to make farther Use of it, and observe from the same Analogy, that Hackling large Bundles at a Time is eminently pernicious to the Flax. The more Fibres are taken up together the more of them certainly will be entangled, the greater therefore the Resistance they will make, and by a necessary Consequence the more of them will snap, and be wrought off into Tow.

The same Analogy leads to another material Observation — Flax should not be laid far over the Hackles in the Beginning of the Operation. But, as in combing, the Hackle should be first applied to the Extremities, and when they are clear and free, admitted farther, and by slow Degrees, into the Body of the Flax; without this Caution the entangled Fibres are drawn back upon another Set of entangled Threads behind them, and that perhaps upon a third, till the whole Parcel is embarrassed, and no Remedy remains but that which is too often used, I am afraid, to the Destruction of our Flax, drawing the Hackles through by main Force and at all Hazards.

It would be a hard Matter to calculate exactly how much we suffer annually by our notorious Negligence in these several above-mentioned Articles, nor would I choose to reproach my Countrymen by rating their Mismanagements at the full Value, and estimating their Errors too precisely: I shall therefore totally abstain from an Attempt of this Kind, and trust it to their own Reflections how far the Misapplication of the Strength and Vigour of our Peo-

‘ ple, and the clumsy and injudicious Use of Instruments, which cannot be handled too discreetly, must affect our Manufacture.

‘ ’Twill be less invidious and more useful to lay before your Readers a particular Account of the Method in Use in *Holland*, and to follow the *Dutch* Dressers through the several Stages of this Operation. Their Example will, I hope, influence our People and invite them to proceed in this important Business by the same Rules.

‘ Those already mentioned are of universal Use, and in the coarsest Kinds of Flax necessary to be observed. In finer Kinds proportionably more is requisite, neater Instruments, better Skill, and greater Nicety.

‘ Accordingly the *Dutch* Flax-Dresser provides himself with different Kinds of Hackles; for his most valuable Flax with four, each in a regular Progression finer than the other: The last has Teeth as small as the smallest Needle, neatly wrought and ranged very close together. These Hackles are not trusted indifferently with every Hackler: Even in that Country, where the Art is arrived to great Perfection, few have Skill to direct an Instrument of so nice and curious Management as the best and finest Hackle. Every Hackler according to his Proficiency has an Instrument of a different Set, and is admitted to the finer Sets only as she improves.

‘ When the Work begins — four Hacklers are placed at the same Bench, and the Flax delivered in small Parcels to the worst Artist at the Bench, who draws it through the coarsest Hackles; the second Hackler receives it from the first and hands it forward to the third, when it has undergone a second Operation under her; the third in the same Manner delivers it in Succession to the fourth, who completes what the three former Hacklings had begun and concludes the Operation.

‘ In the Courſe of this whole Proceſs ’tis curious to
 ‘ obſerve with what Tenderneſs and Care the Flax is
 ‘ handled ; at firſt an Inch, very little more at any
 ‘ Time, is laid upon the Hackles eaſily and lightly—
 ‘ drawn through with apparent Caution, tenderly and
 ‘ ſlowly — raiſed off the Teeth upon the firſt Reſiſ-
 ‘ tance—bruſhed carefully, then tried a ſecond Time,
 ‘ perhaps a third, till it comes freely and uninjured
 ‘ through the Hackles.

‘ The Succeſs answers the Nicety of the Per-
 ‘ formance, and one of thoſe ſkilful Hacklers ſaves
 ‘ abundantly more in Flax, the fineſt and moſt valu-
 ‘ able Flax, which a clumſier Hand would waſte,
 ‘ than the Equivalent of her Day’s Hire. I will add,
 ‘ how ſurprizing ſoever it may ſeem, that this exceſ-
 ‘ ſive Care retards the Operation very little. ’Tis al-
 ‘ moſt incredible how much Flax goes through the
 ‘ Hackles in a Day in this tender cautious Manner.
 ‘ Regularity and Conſtancy ſupply the Place of unr-
 ‘ ly and deſtructive Haſte, and the Work proceeds
 ‘ leiſurely indeed but not ſlowly.

‘ From the Hackles, according to its Staple, the
 ‘ Flax is made up in ſeparate Bundles neatly twiſted
 ‘ and exactly weigh’d. The finer Bundles are lap’d
 ‘ up in Paper, and the whole laid up for the Uſe of
 ‘ the Merchant or the Manufacturer ; each according
 ‘ to his Wants is ſupplied at his Call and without
 ‘ trouble ; and in an Inſtant may provide himſelf
 ‘ from the higheſt Staple to the loweſt.

‘ After ſo many Letters, ’tis Time, Gentlemen,
 ‘ to make room for other Correſpondents or for your
 ‘ own Inſtructions : I have now gone through my
 ‘ Taſk, which has grown under my Pen to a much
 ‘ greater Size than I at firſt imagined. However, if
 ‘ this Attempt to ſerve my Country is received with
 ‘ Approbation, and attended with Succeſs, I am
 ‘ more than rewarded for my Trouble.

‘ I could wiſh you would give me Leave to con-
 ‘ clude theſe Letters by expreſſing in a publick Man-

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‘ ner my own Sense, and that which every Lover of
‘ his Country entertains of the Society ; but as I have
‘ had Occasion to observe that you conceal the Praises
‘ of your Correspondents with as much Care as you
‘ endeavour to deserve them, I shall barely subscribe
‘ myself.

Yours, &c.

R. M.

N^o. XLIV. *Tuesday, February 7th, 1738.*

WE have been frequently solicited, while our Correspondent's Letters upon Flax-Husbandry and Flax-Dressing employed the Reader, to prepare an Abstract of them. Several Gentlemen of the best Sense concurred in thinking, that the bare Directions independently of the Arguments and Illustrations by which they are so happily and ingeniously supported, were better fitted for the Use of the Farmer, and the Manufacturer, might be disposed into more Hands, and become in a shorter Time universal Rules of Practice. They observe that many of our People are not capable of Conviction from any other Source than Example and Authority, and that to them nothing was requisite besides a clear System of plain short Rules recommended by the Example of the *Dutch*, and enforced by the Approbation and Authority of better Judges, who from a curious Perusal of the Letters had satisfied themselves of their Expediency in a different and more regular Method.

In Compliance with so many Solicitations, and encouraged by the Hopes of being serviceable to the meaner Sort who ought to be the peculiar Object of our Care because they particularly want it, we have accordingly drawn up the following Abstract of Directions which begins as the Letters with the Culture, and ends as they do with the Dressing of the Flax.

Strong moist and clayey Loams are the best Land for Flax ; they yield great Crops particularly of Seed,

which in the present State of the Linen Manufacture of this Kingdom ought to be first considered. Light Lands afford fine Flax indeed, but in small Quantities, little Seed, and that indifferent.

When Flax-Ground requires Manures, those should be prefer'd which throw up the least Weeds; of this kind are among other Marle, Lime, and Sea-Wreck.

Upon the same Account Ley is the fittest Land for Flax, which succeeds best always on fresh Grounds provided they are tilled sufficiently.

These ought to be broken up in Spring that they may receive the Benefit of the next Summer's Fallowing as well as that of the succeeding Winter. Three Ploughings will be requisite to bring them into proper Tilth, and if more are bestowed upon them the Farmer won't repent his Labour.

In the second Ploughing at the Approach of Winter, the Ridges may be well thrown up high and sharp to turn off immoderate Rains. — But in that Ploughing which immediately precedes the Sowing, they must be laid as flat as possible, and much broader than for other Crops.

The Choice of Seed is of great Importance, and the thickest, oiliest and heaviest is the best; changing it from any Soil to any other, keeps it from degenerating; from lighter Soils to heavier considerably improves it; constantly sown on the same Ground it fails in a few Years.

The true Time for sowing is in *March*, the first good Season in that Month.

Even sowing is of great Importance, and best attained when the Seedsman goes up the Ridge in a strait Line, and delivers the Seed with his right Hand, and then returns in the same Path, and throws it with the left.

Four Bushels is the full Allowance to the *Irish* Acre; if you sow much thicker your Ground will afford you little Seed, if much thinner, your Flax will probably be coarse and stubborn.

Weed-

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Weeding can be spared but seldom; few Crops are clean without it, and no Flax Crop will be a good one, which is not at the same Time a clean one. You may weed Flax when it is two Inches high, and you may defer it without Danger till 'tis five, sitting on it will not injure it, but treading will destroy it.

By the latter End of *June* or the Beginning of *July* Flax sown in *March* will probably be ripe. A ripe Crop inclines to a bright yellow, and the Seed upon Trial will be found firm and full, and of a lively brown. 'Tis then Time to pull your Flax, except it be designed for the finest Kind of Yarn: In that Case it may stand a little longer till the Seed of some Boles begins to shed; for the ripest Flax works always best in the *Dutch* Method, and turns out finest from the Mills.

To make your Flax, lay it by Handfuls on the Ground in little Heaps a Foot and a Half high; and turn the Heads of every Handful to the *South*, to receive all the Action of the Sun. In eighteen or twenty Days it may be bundled for Carriage, and drawn home.

There it must be laid safely and under Cover; 'tis a needless Trouble and an unnecessary Charge to stack it. The Flax-Dresser should set about it in all Haste to prevent the Loss of the next and the best Season.

To these approved Instructions to the Farmer, we shall add the following Directions taken, each of them, out of a Letter sent to this Society, by Correspondents who were pleased to conceal their Names.

‘ As it is agreed that the lightest Loams and the
 ‘ thickest Crop afford the finest Flax, it may be of
 ‘ Use to let the Farmer know how he may save such
 ‘ Crops from lodging as they generally do. The
 ‘ Method is a little expensive, but if it answers it will
 ‘ quit Cost very well. When the Flax is in the
 ‘ Ground divide your Field into equal Squares, the
 ‘ Sides of which may be four or five Feet long, and
 ‘ at each Angle thrust a forked Stick steady in the
 ‘ Ground: When your Flax is some Inches high,
 ‘ lay

- ‘ lay from Stick to Stick a light cross Pole, and this
- ‘ will support the Flax and hinder it from Lodging.
- ‘ Some use Ropes instead of Poles, but they yield
- ‘ too much and answer but imperfectly.

The Gentleman concludes by assuring the Society that this Method is in common Use abroad, however we leave it to Experience to set a Value on it, and shall wait till then to encourage the Farmer to pursue it.

The second Direction wants less Time to recommend itself, and may probably be more readily complied with.

- ‘ High Winds are so common in this Country that
- ‘ there is Reason to apprehend that the *Dutch* Method of laying your Flax loose upon the Ground
- ‘ would be attended with considerable Inconveniences. I believe the Method I pursue is safer. I
- ‘ gently tie each Handful as close as may be to the
- ‘ Heads, and then spreading out the Ends set it upright on the Ground: Three or four of these together make one Stook, and into such small Stooks I
- ‘ divide all the Flax I have. They dry soon because
- ‘ the Wind has free Access to the Stalks as the Sun
- ‘ has to the Heads, and the Rain cannot lodge in
- ‘ any Quantity upon them.

The Directions to the Flax-Dresser will be found in the next Paper. M.

Nº. XLV. *Tuesday, February 14th, 1738.*

IN the following Directions to the Flax-Dresser we suppose that he is properly provided with Conveniences of every Kind, large Ponds of standing Water, capacious Barns, stanch Granaries, good Working-Rooms, Ovens, Fining-Mills, and Instruments such as our Correspondent has described; they must otherwise have been as voluminous almost as the original Instructions, and a Transcript of them rather than an Abstract. ’Tis

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'Tis of Importance to the Flax-Dresser to buy his Flax betimes directly from the Field, and early in *July*, that he may have sufficient Leisure to dress it before Winter.

Rippling comes next. Two Men may work at every Instrument by fixing it upon a Bench, that one may sit at either End. Let them take small Handfuls at a Time, and draw the Flax through the Ripple without Violence. Two Women to every Bench are necessary to hand the Flax in Bundles to the Rippers, to receive it from them again, to sort it according to its several Degrees of Length, Strength, Ripeness, Fineness, and to tie it loosely in little Sheaves.

After Rippling the Seed must be carried to the Granaries, and the Flax laid down to water; if possible dispose of the whole into your Ponds together; the Summer which draws hastily towards an End is your fittest Season, and should be husbanded with Care; however let nothing tempt you to use Bog-Holes and running Waters, 'tis better to be delayed to the next Season, than discolour or damage all your Flax.

Cover your Flax to keep it down with your Slutch or Mire at the Bottom of your Ponds, or till that be gathered in sufficient Quantities with Clay, Rushes, Fern or Timber. From four to twelve or thirteen Days is the Time requisite for watering. After the fourth examine your Flax daily, and be particularly careful not to let it lye too long: 'Tis a Mistake on the safer Side to draw it off the soonest.

In grassing the shortest Grass should be prefer'd. Dry Sand-banks do well; on either the Flax must be turned every second Day, and generally lyes from a Fortnight to three Weeks.

To dry your Flax heat your Oven thoroughly, then let it cool till a Man can stand in it without Uneasiness, fill it over Night, and your Flax will be ready for the Break next Morning. The Dirt and Straws scutch'd out of the Flax in one Day will heat the Oven for the next.

When

When you break your Flax, take Sheaf by Sheaf out of the Oven as you use it: It comes crisp under the Engine, works better and more easily. 'Tis an Error to lay the Flax as we do as far as may be from the Joint, the nearer it is placed to the Centre of Motion in the Break, the more readily it splits and the less Damage it receives.

In Scutching choose the broad round Scutch, the square and narrow one in use among us cuts and destroys the Flax.

By the Time the Flax is scutch'd, and about the Middle of *October*, 'twill be Time to thresh the Seed.

This may be done by driving Horses backwards and forwards on the Boles, or by drawing over them a heavy Rolling-Stone upon a smooth hard Floor.

Cleaning it requires more Nicety; to do it thoroughly it must first go through the Winnow, which separates it from the Boles: Through the Riddle next to take out Straws, Stones, and larger Dirt; then successively through two different Sieves, the first bored with oval Holes to let through the Seed, and nothing else of greater Bulk, the second closer to retain the Seed, and afford a Passage to all smaller Bodies: And lastly through the Screen or Wire-Harp which frees it from all Dust.

When the Flax-Dresser has thus cleaned his Seed he should return to his Flax, and put it through the Fining-Mills. The Wheel in these turns alternately from right to left, and from left to right, twice each Way, and according to the Number of these double Turns the Flax comes out the finer, the smoother, and the softer; fourscore such Turns is the most that any Flax requires, and probably as much as it will bear.

In Hackling Women and Children should be employed from Choice. They work with greater Gentleness than Men, and Care and Tenderness are the main Excellencies in this Business. For the best Flax four Sets of Hackles will be requisite, each of them of a different Fineness, Through these it may be drawn

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drawn successively, and every Time with o rtion-able Caution: The last, whose Teeth is like the finest Needles, requires the utmost Skill, and should be trusted with few Hands.

These Directions, if they answer no other Purpose, will at least be an useful Index to our Correspondent's Letters. — We hope indeed a farther Use from them; but were it otherwise, as they have been drawn up in Compliance with the Opinion of many Gentlemen, we shall think our Trouble well bestowed in an Attempt to oblige them.

The following Letter will conclude this Paper properly, and we shall give it to the Reader without Alteration or Apology.

• It is but a small Mite I have to offer to your Ap-
• probation, but I am loth it should be lost or buried
• without imparting, having seen the good Effects of it.
• It is an Invention of one *Rigby*, in the Service of
• the Right Hon. the Lord *St. George*, in his Factory
• in *Connaught*. After Rippling the Flax, he sent the
• Boles to the Mill in Sacks, ordering the Mill-Stones
• to be set as usual for making Groats, then ground
• the Boles and found it hurt not the Seed to any Va-
• lue, but left the Grist fit for the Winnowing, by
• which Means in a few Days were saved upwards of
• twelve Hogsheads of good Seed, which must have
• taken long Time and many Hands to accomplish
• other Ways. The Mill-Stones may be set at Dis-
• cretion to grind as fine as you think fit, but so as
• not too much to damage the Seed. If this seem
• worthy your Notice and Publishing, I hope the next
• Time I trouble you, shall be with something more
• material, and I shall take it an Honour to be at
• your Command.

A. B.

P. S. The Boles are supposed to be dry.

M.

N.

Nº. XLVI. *Tuesday, February 21st, 1738.*

THE following Letters upon Brewing contain many curious Experiments which have a natural Tendency to make that an Art, which till now has been more properly a Knack and directed by Custom or by Chance, rather than by Principle.

GENTLEMEN,

IT is the Misfortune of our Country, that for the most Part, Persons of all Ranks live above their Income. This Evil is a fruitful Source of many more ; and if unrestrained, must inevitably end in general Poverty and Distress. It is foreign to my Purpose, and it is grating in itself, to enter into a Detail of the Particulars. I wish we had Virtue enough to correct what we sensibly feel to be amiss. At present, I shall content myself with observing, that for some Time past, Wine is become almost the general Entertainment of our People ; and the Care and Improvement of Malt Liquor almost totally neglected. I apprehend it would hardly check this growing Evil, to observe that Ale and Syder seem by Nature designed for our Climate, to supply the Place of Wine. That Ale is more balsamick, freer from Tartar, and less liable to pernicious Adulterations. — Those Reasonings, however just, would be in vain opposed to the Force of prevailing Fashion, which, as an ingenious Writer observes, creates Appetites, governs Nations, and supplies the Place of Reason in the Vulgar of all Ranks. Gentlemen of Character and Fortune must redress this Mischief. They must make it fashionable first to brew, and then to drink good Ale ; Countenance a particular Inspection into the brewing it, and condescend to make proper Observations and Inferences from the different Appearances. Were this happy Point once gained, the whole Operation would

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‘ would soon be performed in a more rational Manner
 ‘ than it has been hitherto ; we should soon begin
 ‘ to vie with our Neighbours in the Delicacy of our
 ‘ Drink, and even contend with *France* in her Wine.

‘ That I may contribute something to forward this
 ‘ laudable Design, I take the Liberty to send you
 ‘ some Observations and Experiments upon the time
 ‘ requisite for boiling the Worts. The Experiments
 ‘ have been several times repeated with the same
 ‘ Success ; so that I can assure you they are accurate.
 ‘ The Consequences deduced from them appear to
 ‘ me to be just, but them I submit to your Candor
 ‘ and Judgment ; and if they be so happy as to
 ‘ meet with Approbation, I shall think my Pains
 ‘ abundantly rewarded.

‘ I take it for granted, every Man who expects
 ‘ to brew good Drink will be careful in the Choice
 ‘ of his Hops and Malt. I shall not spend much
 ‘ Time therefore in enlarging on these Articles, but
 ‘ only obviate a vulgar Prejudice, which seems too
 ‘ universally to have prevailed. I mean that we are
 ‘ not to expect good Drink from *Irish* Hops and
 ‘ *Irish* Malt. I have tasted excellent Ale several
 ‘ Years old made of our own Barley, wherein no
 ‘ greater a Proportion of Hops or Malt were used,
 ‘ than is commonly done in *England* for keeping
 ‘ Drink. And I will venture to affirm this Ale was
 ‘ no way inferior to the *English*. I must confess we
 ‘ are not arrived to any great Perfection in the Cul-
 ‘ ture and Management of Hops ; nevertheless, the
 ‘ Year 1736, gave us a sufficient Proof that in a
 ‘ good Season we may be supply’d from among
 ‘ ourselves with that valuable Commodity. I assure
 ‘ you I know several Instances, where the *Irish* Hops
 ‘ used in the same Proportion as the *Pocket* or *Wor-*
 ‘ *cester* Hop, gave the Drink a higher Relish, and
 ‘ preserve it full as well. But to illustrate this Mat-
 ‘ ter a little farther, give me leave to observe, that
 ‘ as the bitter of the Hop is of a fixed Nature, and
 ‘ will

' will not evaporate by the heat of boiling Water,
 ' it is easy to determine the Quantity of Bitter in
 ' any given Quantity of Hops, by the Quantity of
 ' Extract and fixed Salts produced from them. For
 ' this Purpose I made several Experiments on the
 ' *Kentish*, *Worcester*, and *Irish* Hops of 1736. The
 ' *Kentish* yielded the greatest Proportion of fixed
 ' Salts and Extract. But the *Irish*, an equal, and in
 ' several Specimens a greater Proportion of both
 ' than the *Worcester* or *Pocket*.

' Though I do not design, as I mentioned before,
 ' to enlarge on the Qualities of Malt and Hops,
 ' I must add a second Observation, that in order
 ' to have good Drink, it is also necessary the Grain
 ' should be perfectly malted, and not used too soon.
 ' If it be imperfectly malted, the Drink will acquire
 ' a raw Taste. And if it be fresh off the Kiln, it
 ' retains an extraneous heat from the Fire, which
 ' Time only wears off. Besides the Wort made
 ' from such Malt requires a much longer time to
 ' break than that does which has been made some
 ' Months.

' It is also of Importance to attend to the Size of
 ' the Copper you make use of in brewing. The
 ' Coppers of our publick Brewers in *Dublin* gene-
 ' rally contain from thirty to sixty Barrels, and re-
 ' quire to be kept longer boiling, than those in pri-
 ' vate Houses, which contain for the most Part only
 ' from one to three. The Quantity of Fire used
 ' for these is much greater in Proportion than what
 ' the former require; and consequently, the boiling
 ' and Evaporation are proportionably greater in the
 ' small than in the large ones; insomuch that I have
 ' observed in one of the smaller Size, an eighth part
 ' of the Wort evaporated in three Hours boiling,
 ' when in the same time a twelfth or less was only
 ' lost in one of larger Dimensions.

' Having premised these few Particulars, I shall
 ' now endeavour from the Nature of the Hop and
 ' Malt

‘ Malt to convince the Readers, that long boiling is
 ‘ not the most effectual way of obtaining and com-
 ‘ bining their Virtues.

‘ The Hop is a bitter Aromatick, exhibiting a
 ‘ sensible Acrimony to the Taste, and endued besides
 ‘ with an Austerity or Roughness.

‘ This last quality is not commonly observ’d ;
 ‘ but evidently manifests itself, in a long Decoction
 ‘ of Hops in fair Water, so as almost to equal the
 ‘ Roughness of Alum.

‘ The aromatick Part of the Hop, on the contrary,
 ‘ is volatile, and, as I have frequently experienced,
 ‘ rises and comes over in a whitish Water by the mild
 ‘ heat of the cold Still.

‘ The grateful Bitter is of a middle Nature, Semi-
 ‘ volatile, requiring more Fire to extract it than the
 ‘ aromatick Part, and less than the austere astringent
 ‘ one.

‘ Hence, though these several Qualities reside to-
 ‘ gether in the Hop, they are capable of being se-
 ‘ parated, and the aromatick Flavour and grateful
 ‘ Bitter may be had alone without the astringent
 ‘ nauseous one.

‘ To obtain this should be the Brewers aim. And
 ‘ this can no otherwise be done, than by boiling the
 ‘ Wort much less than has hitherto been usual. For,
 ‘ as the Virtues of the Hop reside in the Squammæ or
 ‘ its subtile and almost transparent Leaves, the yellow
 ‘ Dust which adheres to them, and the fine Mem-
 ‘ brane which contains the Seed, all Parts of a very
 ‘ nice and delicate Texture, ’tis plain, that upon too
 ‘ long Decoction, they will be all extracted, and the
 ‘ strong astringent Roughness together with the rest.

‘ Some indeed support the Practice of long boil-
 ‘ ing, by ascribing some useful Qualities to the Seed
 ‘ itself, which they suppose requires more of the Ac-
 ‘ tion of the Fire. But this is intirely a Mistake ;
 ‘ the Seed itself being almost, if not altogether, void
 ‘ of all Flavour and all bitterness.

‘ What I have here affirmed of the Nature of the
‘ Hop, is the Result of many and repeated Experi-
‘ ments. I always found, that the aromatic Flavour
‘ of the Hop was extracted by the gentle Heat of
‘ Infusion in warm Water, that upon a Quarter of
‘ an Hour’s boiling, the pleasant Bitterness and Acri-
‘ mony came next, and that when the Decoction was
‘ continued above an Hour, the nauseous, terrene and
‘ austere Roughness shewed itself.

‘ I shall add, that when the Hop remained above
‘ an Hour in Decoction, its grateful Smell and Fla-
‘ vour were entirely lost; the aromatick Parts eva-
‘ porated, and what remained was bitter and austere,
‘ nauseous and muddy. Longer boiling produc’d
‘ proportionable Effects of the same kind, and af-
‘ forded a mere bitter, still more nauseous than the
‘ former.

‘ This I attribute to the Stalks, whose woody Con-
‘ texture, however stubborn, yields at last to conti-
‘ nued Decoction, and impregnates the Water with
‘ that intense bitter and nauseous harshness. ’Tis
‘ true, that little of this austere harshness betrays itself
‘ in chewing the Hop-Stalks; they appear almost in-
‘ sipid to the Palate; but upon boiling them alone
‘ for three Hours in common Water, I found all the
‘ Harshness I ascribe unto them.

‘ The Result of the Observations in this Letter is
‘ plainly this. That long boiling of the Hop is a
‘ pernicious Practice—produceth with great Art and
‘ Labour an inert austere, and nauseous Bitter in the
‘ Place of what indulgent Nature had designed us—
‘ a pleasant active aromatick one.

I am, &c.

R—y W.

N^o.

No. XLVII. *Tuesday, February 28th. 1738.*

GENTLEMEN,

‘ **W**HAT I advanced in my last Letter concerning the Power of Infusion, is not peculiar to the Hop alone, but is observable in other Vegetables. And as this is a Matter of some importance in the Article of Brewing, I hope it will not be thought superfluous to illustrate this a little farther.

‘ It is almost needless to mention that the Virtues, the Smell, and the Flavour of Tea are best obtained by mere Infusion. It is also certain that the Syrups of Roses and Violets, which consist of volatile and fixed Parts, are best prepared by Infusion only. But the Power thereof appears no where plainer than in the Tanners Ouze, which is nothing else than an Infusion of Oak-Bark in cold Water. To these Particulars give me leave to add, that even Substances of a more close and compacted Nature, which yield their Virtues in Decoction only, are found to part with them more quickly and more effectually, if they have undergone a previous Infusion, as is evident in *Lignum Vitæ*, and several others. And to name no more, even animal Bodies are very differently affected by mild and intense Heat. Thus if Flesh be put into Water boiling hot, and continue some Time in it, the Juice or Gravy will be preserved in it. Whereas, on the other Hand, if it be put into cold Water at first by the subsequent gradual Warmth, the Gravy is drawn out into the Water, and affords good Broth but sapless Meat. These Instances are sufficient to illustrate what I advanced in my former Letters, since they plainly tend to prove that if the Hop, a vegetable of a tender delicate Texture be sufficiently relaxed by a previous Infusion, a short Decoction afterwards will most effectually extract its Virtues.

' I shall now endeavour to shew that long Boiling
 ' is as destructive of the Virtues of the Malt as it is
 ' of those of the Hop; and in order to this I must
 ' observe that in all Vegetables, which resemble one
 ' another in the Composition of their Parts, the same
 ' Management is requisite to extract their Virtues.
 ' Thus the Virtues of the mealy Roots of Marsh
 ' Mallows, and Seeds of Quinces, Fenigreek, and
 ' others, are best obtained by an Infusion of warm
 ' Water on hot Embers, continued for some Time,
 ' and a gentle Simmering afterwards. In like man-
 ' ner the Virtues of Malt are not extracted by Decoc-
 ' tion at all, but by mere Infusion only, and that in
 ' Water below the Degree of boiling. For should
 ' the Water be poured boiling hot upon the Malt,
 ' every Brewer knows it would coagulate the Meal,
 ' and in his Language hinder it from spending it
 ' self.

' Having premised thus much, let us briefly con-
 ' sider the Nature of Malt.—Malt is the mealy parts
 ' of Barley, attenuated and volatilized, first by a be-
 ' ginning Vegetation, and afterwards by the active
 ' Force of the Fire on the Kiln, and thus prepared
 ' evidently consists of two distinct Parts; the one
 ' spirituous, the other terrene. It is this spiritu-
 ' ous Part which yields that mild and grateful Fra-
 ' grancy when the Malt is mashing, or the Wort a
 ' boiling; and in the Language of the Chemist is
 ' called Spiritus Rector; being the Seat of the Smell
 ' and Taste of all Vegetables. This Spirit is entire-
 ' ly distinct from that which Fermentation produces
 ' afterwards, and is of absolute Importance to the
 ' Ale. For should this fragrant active Spirit be dis-
 ' sipated, or fly off by too long Infusion or Decoc-
 ' tion, the Ale is robb'd of all its sprightly Parts, and
 ' remains an inert vapid Liquor. Of this the Brewer
 ' seems apprized, and therefore while the Malt is
 ' mashing, takes prudent Measures to prevent it.
 ' This he does by capping it, as it is called, in the
 ' mashing

‘ mashing Tub with a little dry Malt and Sacks
 ‘ thrown over it. But after mashing, his Care in
 ‘ this particular unhappily ends, and that long De-
 ‘ coction he afterwards uses to combine the Virtues
 ‘ of the Hop with this Infusion of the Malt, not only
 ‘ impregnates his Alewort with the nauseous and
 ‘ austere Bitter of the Hop, but also dissipates this
 ‘ active balsamick Spirit of the Malt in a greater or
 ‘ less Degree. But this is not the only Mischief
 ‘ which arises from a long continued boiling of the
 ‘ Worts.—Another, and a very unhappy Consequence
 ‘ attends it, namely, that the thinner and more fluid
 ‘ Parts are dissipated; and if the Decoction be over
 ‘ long protracted, the Ale-wort will be reduced at
 ‘ last to a viscid Liquor, almost as tough as Birdlime,
 ‘ to which Consistence it more or less approaches,
 ‘ according to the Degree and Length of boiling.
 ‘ If it be only boil’d until the Wort be properly
 ‘ impregnated with the Virtues of the Hop, which
 ‘ by the way is the only valuable End of boiling;
 ‘ you have a light, penetrating, diluting, diuretick
 ‘ Liquor; which has imbib’d and does retain the
 ‘ Smell and Flavour of Hop and Malt.—Whereas
 ‘ should this Decoction be long persisted in, your Ale-
 ‘ wort becomes glutinous and viscid, clogging to the
 ‘ Stomach, unfit for the purposes of Drink, and
 ‘ greatly tending to produce Obstructions and Dis-
 ‘ eases in the human Body.

‘ Before I leave the Article of Malt, allow me to
 ‘ take Notice of another pernicious Practice in Brew-
 ‘ ing, which will naturally lead me to consider the
 ‘ terrestrial Part of Malt I just now mentioned. The
 ‘ Practice I mean is the infusing or mashing it too
 ‘ long. Here let me observe, that the first runnings
 ‘ from this Infusion are always the most spirituous
 ‘ and fragrant, the most balsamick and sweet, the
 ‘ least disposed to acidity and fittest for keeping. What
 ‘ thus runs off is called the Ale or Beer-wort. The
 ‘ next Infusion is for Small Beer, which is made by

' pouring fresh Water on the Grains ; what is thence
 ' drawn off is robb'd of much of its grateful Spirit,
 ' Smell and Flavour, and is greatly disposed to
 ' Acidity. The third and last Infusion is of cold
 ' Water poured on the Grains, exhausted by the two
 ' preceding Infusions, and is called Taplash. It is of
 ' a wheyish Colour, having lost intirely the bright
 ' amber Tincture, the grateful Smell and Flavour,
 ' with all the balsamick Sweetness of the first run-
 ' ings, has an ill taste from the Grains, and is com-
 ' monly sourish as it runs off.

' Of the same Nature are the Appearances which
 ' manifest themselves in the making of Cider and
 ' Wine. The Juice, which distils of its own accord
 ' from the ground Apples, is by much the richest ;
 ' but that which is forced out by the last and hard-
 ' est squeezings of the Press, is weaker, rougher, and
 ' worse tasted. If fresh Water be poured on the
 ' remaining Murc, it produces Ciderkin, a Liquor
 ' resembling Cider, as the small Beer before men-
 ' tioned resembles Ale.

' In like manner what runs from the first pressing
 ' of the Grape is always the finest and most delicate.
 ' And the principal Skill in making Wine consists
 ' in knowing when to draw off the Juice from the
 ' Skins, Stones, and Stalks in the Vat. The shorter
 ' time the Juice is fermented with these, the sweeter
 ' and paler is the Wine ; but if this Fermentation
 ' be continued long, the Wine becomes drier, higher
 ' coloured, and more austere. This is so true, that
 ' some Wines, by staying long on the Murc, never
 ' lose the harsh taste of the Grape Stone, and become
 ' as red as Ox Blood.

' From these Particulars it manifestly follows that
 ' the Mashing or Infusion of the Malt, protracted too
 ' long, must greatly injure the Worts, much of the
 ' balsamick Spirit will fly off, a tendency to acidity
 ' from the terrestrial feculent Parts of the Grains be
 ' contracted, and if it be done in Summer the Ale
 ' will

‘ will certainly turn four. In what I now advance I have
 ‘ not only Reason but Experience on my Side, and
 ‘ I can venture to affirm, that strong Beer as well as
 ‘ middling Table Beer made of fresh Malt and fresh
 ‘ Hops, will be sufficiently infused, if it be left to run,
 ‘ in two Hours.

‘ Upon the whole, if long Mashings be attended
 ‘ with such Inconveniencies to the Worts, and long De-
 ‘ coction afterwards, instead of combining the valuable
 ‘ and active Parts of Hop and Malt, in reality dis-
 ‘ sipates them, there needs no other Arguments to
 ‘ explode the Method of Brewing, so long established
 ‘ here, and to recommend a Practice not chargeable
 ‘ with such pernicious Effects. I have not room to
 ‘ enlarge upon that Head in this Letter, and there-
 ‘ fore shall refer the Consideration of it to my next.
 ‘ In the mean Time give me leave briefly to con-
 ‘ sider the Nature and Effects of our common Small
 ‘ Beer, and in its room to recommend the entire
 ‘ Guile Small-Beer, which is made of fresh Malt and
 ‘ fresh Hops.

‘ Our common Small-Beer which will not keep a
 ‘ Month, is made by an Infusion of the Grains and
 ‘ Hop exhausted in the Preparation of the Ale-Wort,
 ‘ or at least considerably deprived of their balsamick,
 ‘ spirituous and aromack Parts, and thoroughly
 ‘ impregnated with their gross, terrestrial, austere and
 ‘ nauseous ones. Parts of such a Nature received into
 ‘ the Body must gradually create Viscidities and Ob-
 ‘ structions, and prove greatly detrimental to tender
 ‘ Constitutions and weak Stomachs. On the other
 ‘ Hand the entire Guile Small Beer is chargeable
 ‘ with none of these Inconveniencies, and is un-
 ‘ doubtedly the most wholesom and useful of Malt-
 ‘ drink — If well prepared, it will keep sound a
 ‘ Twelve Month. It retains the more spirituous
 ‘ aromack Parts above described, and sufficiently
 ‘ answers the End of diluting our more solid Food ;
 ‘ it carries no Viscidities into the Blood, and by a

gentle Stimulus promotes the necessary Contractions of the Vessels. In a word, it is enriched with all the valuable Properties of the Hop and Malt, and is as grateful as it is wholesom.

I am, &c.

R—y W.

N^o. XLVIII. *Tuesday, March 7th, 1738.*

GENTLEMEN,

FROM what I have said in my former Letters, I flatter my self your Readers are convinced, that a long continued mashing of the Malt, and a tedious boiling of the Hops and Wort are so far from being necessary to obtain the Virtues of either, that they naturally tend to rob the Worts of the aromack or balsamick Qualities of both. I have chosen to enlarge perhaps too much upon these Articles, because Prejudices supported by Tradition, and established by Practice, are not easily removed; and yet unless we can succeed herein, I fear we are not like to arrive to any great Perfection in our Malt Liquor.

It were to be wished we had unerring Rules to guide us in our brewing it. But so many Circumstances are necessary to be attended to, and a Miscarriage in any one of them is so apt to spoil the Whole, that it is not easy to point out a Method which will always answer. Were there nothing else, the Qualities of Hops and Malt differ so much at different Times, that it is impossible to fix a Standard for making any Drink, which will not necessarily admit of great Variations. Sometimes this Difference appears in the Hops, inso-much that in one Season five Pounds of Hops shall impregnate the Wort with its bitter aromack Qualities as strongly as seven Pounds shall do in another.

‘ another. There is also a remarkable Difference
 ‘ arises from the Soil where they were raised. Thus we
 ‘ find a Pound and a Half of *Kentish* Hops is nearly
 ‘ equal to two Pounds of those which grow in *Wor-*
 ‘ *cestershire* ; to which let me add, that the Bit-
 ‘ ter in the *Kentish* Hop is wrap’d up in a more te-
 ‘ nacious Oiliness than in the *Worcester* ; and for that
 ‘ Reason the former is always to be prefer’d for Drink,
 ‘ which is designed for keeping. The *Worcester* an-
 ‘ swers well enough in Ale, that is usually kept for
 ‘ a Month or six Weeks. But farther, Malt which
 ‘ is made of Barley requires a greater Proportion of
 ‘ Hops, than that which is made of Bear. And
 ‘ Pale but well-dried Malt needs a larger Share than
 ‘ what is high-dried. Need I add, that what is brew’d
 ‘ in Summer, must be better hop’d than what is
 ‘ brew’d in Winter ?

‘ Considerable Varieties must also arise from the
 ‘ Diversity of the Grain, whether, for Example, it
 ‘ be Bear or Barley ; and also from the greater or
 ‘ lesser Degree of Mealiness in each, as well as the
 ‘ Perfection or Imperfection in Malting. For these
 ‘ Reasons, I believe you will not expect from me a
 ‘ perfect Receipt for Brewing. Gentlemen’s Palates
 ‘ vary much, and what to one would be sufficiently
 ‘ strong and agreeably bitter, to another would ap-
 ‘ pear both weak and scarcely bitter. — Nevertheless,
 ‘ that I may not seem wholly wanting on this Head,
 ‘ I shall venture to send you the several Proportions
 ‘ I have frequently, and I think successfully, tried
 ‘ in Brewing three Sorts of Malt-Drink, *October* or
 ‘ *Beer*, *Ale*, and *entire Guile Small-Beer* ; and after-
 ‘ wards subjoin such Directions as appear necessary to
 ‘ be observed in all ; as well as those which particu-
 ‘ larly relate to the several Kinds.

‘ *October* or *Beer* so called, because in that Month,
 ‘ the best of that Kind of Drink is always made, I
 ‘ have prepared in the following Manner ; — from
 ‘ three Barrels or three Barrels and a Half of the best
 ‘ Barley-

• Barley-Malt, draw a Barrel and a Half of Drink,
 • to which, seven, eight or nine Pounds of the best
 • *Kentish* Hops must be added in the Manner here-
 • after described. *Ale* to be kept three Weeks or a
 • Month, I have prepared in this Manner. From a
 • Barrel and a Half of the best Barley Malt, draw a
 • Barrel or a Barrel and a Quarter of Drink ; and to
 • this put two Pounds of the best *Worcester* Hop ;
 • which for Drink like this, intended for a speedy
 • Consumption, will abundantly suffice. But if the
 • Ale is designed for keeping two or three Months,
 • add half a Pound more of Hops to the same Pro-
 • portion of Malt and Wort.

• *Entire Guile Small-Beer* may properly be divided
 • into three Classes ; as Small *October*, which may be
 • kept a Twelvemonth ; middling Beer, which may
 • be kept two Months ; and Small-Beer, which is
 • to be drank in three Weeks.

• The first, which is *Small October*, is at no Time
 • so properly to be made as in *October*, and is done as
 • follows: From a Barrel and Half of the best Bear
 • Malt, draw a Barrel and three Quarters of Drink,
 • to which put three Pounds of the best *Kentish*
 • Hops.

• For the second or *Middling Small-Beer* : From a
 • Barrel and Half of the best Barley-Malt, draw two
 • Barrels and three Quarters of Drink, and put two
 • Pounds and a Quarter of Hops.

• For the third or *smallest Kind* : From a Barrel and
 • a Half of the best Bear Malt, draw two Barrels and
 • a Half of Drink, and put two Pounds of Hops.

• Before I proceed, give me Leave to observe, that
 • the Reason I have mentioned Bear and Barley Malt
 • promiscuously, is purely because the several Kinds
 • of Drink now mentioned I have known to be made
 • in that Way ; and a little Observation will instruct
 • the Brewer to substitute one in the Place of the other,
 • in proper Proportions, when he pleases to vary
 • them.

‘ I shall now take Leave to add some general Instructions, which may be applied to the several Kinds of Drink I have at present taken Notice of.

‘ Rain Water is preferable to any other for Brewing, and must be reduced to different Degrees of Heat, though still below the Degree of Boiling, according to the various Qualities of the Grain. In Water prepared for Brewing the greater Degree of Heat is, in the Brewer’s Language, called a sharper Liquor; the less is called a slacker; and the justly adapting the proper Degree of Heat to the different Qualities of the Grain, is the single Article upon which depends the complete Extraction of the Virtues of the Malt in general. It may be affirmed, that a slacker Liquor most effectually extracts the mealy Parts of Malt, and makes the Tincture richer, tho’ less transparent. But to be more particular: High dried Malt and new Malt require slacker Liquor, than what is pale and longer made. Fine ground Malt requires a slacker Liquor than what is coarser and more grossly ground; and Barley, which is more mealy, requires a slacker Liquor than Bear Malt. But whether Bear or Barley-Malt be used, Care ought always to be had, that it be such as has been made some Months, and ground about twelve Hours before you mash, for then it yields its Parts most perfectly.

‘ I have already observed, that great Care is requisite that the Water used in Mashing be neither too slack nor sharp: When that is well adjusted, there remains another Circumstance which must nicely be attended to, I mean, the Time this Mashing or Infusion ought to last. In general, I am of Opinion two Hours Infusion will suffice for any Wort; for should it be continued longer, especially in Summer Time, or in pale well-dried Malt, which yields its Virtues sooner than the high-dried, I make no Doubt the Drink would quickly acquire an ill Taste from the Grains, and soon turn sour afterwards.

‘ The infusing and boiling of the Hop is the next
 ‘ Article to be considered. What I have said before
 ‘ on this Subject makes it needless to enlarge, and
 ‘ therefore I shall just observe, that the Hops must be
 ‘ well rubb’d, and if cleared from the Stalks they will
 ‘ be better. Thus prepared, put them into the Under-
 ‘ back, and at the proper Time let the Wort run on
 ‘ them in a small Stream, by which Means they will
 ‘ be gradually opening. — After the Wort is all run
 ‘ off into the Underback, let the Hops continue to
 ‘ soak in it about half an Hour. And thus by the
 ‘ moderate Heat of the Wort, agreeably to what I
 ‘ have advanced concerning the Power of Infusion,
 ‘ the Hops will be relaxed and opened, and commu-
 ‘ nicate, a considerable Share of their bitter aromatick
 ‘ Virtue. This will also dispose them more readily to
 ‘ yield to the Power of the subsequent Boiling. In or-
 ‘ der to this, the Wort thus infused and the Hops
 ‘ must be put together into the Copper, and during
 ‘ the Time boiling lasts the Copper ought to be kept
 ‘ close covered ; by which much of the volatile Parts
 ‘ will be preserved, whilst the acrimonious Bitter is
 ‘ extracted.

‘ When this is done, your next Care is to at-
 ‘ tend to the Time of Boiling, and from the Rea-
 ‘ son I advanced already, and some Experiments I
 ‘ shall give hereafter, I may venture to affirm, that
 ‘ it is not any Way essential to its Goodness, that any
 ‘ Kind of Malt Drink should boil above an Hour in
 ‘ small Coppers, provided the Circumstances I have
 ‘ mentioned be attended to. Nay, what is more, I
 ‘ am thoroughly convinced the Goodness of some
 ‘ particular Sorts of Drink depends upon its being
 ‘ boiled a shorter Time than I have limited. When
 ‘ the Wort has boiled its Time, do not, as is usually
 ‘ done, strain it directly from the Hops, but let
 ‘ them remain in it, as long as the Wort continues
 ‘ warm and thin enough for straining. And thus the
 ‘ first and second Infusion, with the intermediate De-
 ‘ coction,

coction, will thoroughly saturate your Worts with all the Virtues of the Hop.

The Directions I have now laid down are applicable to the several Sorts of Malt Drink I just now mention'd. Besides these, it is necessary I should add some other concerning the different Management which each particular Kind requires. — But as I fear I have already exceeded the Bounds of your Paper, I shall refer them and some other Observations to my next.

I am, &c.

R—y. W.

Nº. XLIX. *Tuesday, March 14th. 1738.*

GENTLEMEN,

IN my last Letter I offered such Instructions as regarded Brewing in general, and shall now add some Hints concerning the Management of each particular Sort.

The Wort designed for good *October* is fully saturated with the Meal of the richest best dried Malt. Hereby it acquires a greater specifick Gravity than Ale wort, deposits a greater Sediment, and commonly requires, at least in larger Vessels, near twelve Months to fine. From hence it plainly follows that boiling it in small Coppers for two or three Hours successively must dissipate the finer Parts, and by Degrees reduce it to the Consistence of Mum, and of Course be more prejudicial to this than any Kind of Drink.

But as it has hitherto been the received Opinion, that this *October* or keeping Drink should be the longest boiled of any, allow me to illustrate this Matter a little farther. — Every Body knows Milk is a more viscid tenacious Fluid than pure Water, and yet it is demonstrable that it boils much sooner and in boiling wastes much faster than Water. The
Rea-

‘ Reason possibly may be this, that the Particles of
 ‘ Fire are more closely wrapt up in the thicker Con-
 ‘ sistence or Viscidity of the former than the latter,
 ‘ and thereby cause a more violent Agitation, and
 ‘ consequently Evaporation ; but be this the Cause or
 ‘ not, it is undoubtedly true in Fact, that in boiling
 ‘ the same Quantity of strong and small Wort with
 ‘ the same Degree of Heat, the strong *Octoher* Wort
 ‘ is by Experience found to waste both more and faster
 ‘ than the Small-Beer Wort ; and therefore, unless
 ‘ we would reduce it to the Consistence of a Syrup,
 ‘ it ought to be boiled a shorter Time. But that this
 ‘ Matter may not want a Sanction from Experience,
 ‘ I can assure your Readers, that in those Parts of
 ‘ *England* where Beer is in the greatest Repute, the
 ‘ most Curious never boil this Kind of Wort above
 ‘ half an Hour, and several don’t exceed fifteen or
 ‘ twenty Minutes. I have only to add upon this Ar-
 ‘ ticle of *Octoher*, that no Hops but the *Kentish* have
 ‘ hitherto been found durable enough to preserve it a
 ‘ Twelvemonth, before which Time it is rarely used.

‘ It has been already hinted that the *Worcester* Hop
 ‘ will be sufficiently strong for *Ale*. — Let me only
 ‘ remark that Ale-wort need not generally boil above
 ‘ half an Hour, in which Time it will obtain a suffi-
 ‘ cient Quantity of the Bitter from the Hop, and
 ‘ when it comes to be drank, recommend itself by its
 ‘ superior Lightness and Flavour, far beyond what
 ‘ is boiled two, three, and four Hours.

‘ As to the entire Guile Small-Beer, I shall just ob-
 ‘ serve, that the Wort contains a larger Proportion
 ‘ of Water to its Malt than either Beer or Ale, and
 ‘ therefore is not in such immediate Danger of being
 ‘ injured in its Consistence by being over boiled. How-
 ‘ ever, I am satisfied an Hour’s Boiling will suffice for
 ‘ it ; and this I know to be the Practice of an eminent
 ‘ Small-Beer Brewer in *London*.

‘ I am sensible what I have now added about boil-
 ‘ ing the Hop is liable to a plausible Objection, and
 ‘ there-

‘ therefore I shall distinctly consider it, and endeavour
 ‘ to remove it.

‘ The Objection is this, that tho’ the Hop has been
 ‘ boiled in the common Way for three or four Hours,
 ‘ it shall nevertheless retain sufficient Bitterness to im-
 ‘ pregnate the Small-Beer of the same Brewing : From
 ‘ whence it is inferred, that long Boiling is absolutely
 ‘ requisite fully to extract the Bitter of the Hop.

‘ In answer to this, let me observe that it has been
 ‘ proved by a former Experiment, that the aroma-
 ‘ tick volatile Part of the Hop must fly off by this
 ‘ boiling, so that both Ale and Small-Beer must be
 ‘ deprived of that ; and with regard to the acrimonious
 ‘ Bitter, I shall now endeavour to shew, that if the
 ‘ Small-Beer be impregnated with it after the Ale has
 ‘ boiled so long, either there may have been an unne-
 ‘ cessary Waste of Hops by too large a Quantiy being
 ‘ used for the Ale — Or that the Ale is deprived of
 ‘ such a Proportion of the Bitter as the Small-Beer re-
 ‘ ceives. In order to prove the first of these, give me
 ‘ Leave to observe, that those who are conversant in
 ‘ Dissolutions, know that a Menstruum can receive
 ‘ only a determinate Proportion of the impregnating
 ‘ or dissolvable Matter. — When it is saturated with
 ‘ this it will admit no more. Thus if you sufficiently
 ‘ saturate with Salt a given Quantity of Water, you
 ‘ may add what Proportion more you please, it remains
 ‘ untouched by the Water and falls to the Bottom. In
 ‘ like Manner, a given Quantity of Water will re-
 ‘ ceive a certain Proportion of the Bitter of the Hop
 ‘ and no more.

‘ That I might be satisfied of this, I boiled two
 ‘ Ounces of Hops in ten Quarts of Water, until I
 ‘ evaporated it into an Extract. Afterwards I boil’d
 ‘ the same Quantity of the same Sort of Hops in two
 ‘ Quarts of Water, into an Extract also. And upon
 ‘ comparing the Quantities of both, I found I had
 ‘ one Third more of Bitter Extract from the ten
 ‘ Quarts than from the two. In this Experiment I
 ‘ think

' think it appears that the Pores of the Pottle of Wa-
 ' ter were not able to contain the Quantity of Bitter
 ' communicable from the two Ounces of Hops, and
 ' that consequently the remaining Hop would have
 ' embittered more fresh Water. The Application
 ' of this unto the Ale-wort is very natural — for if the
 ' Ale-wort be thoroughly impregnated with the Bit-
 ' ter of the Hops, and yet there be sufficient Bitter-
 ' ness remaining in them to serve the next Infusion
 ' for Small-Beer, it is evident more Hops were al-
 ' lotted to the Ale, than were necessary for it. Or
 ' should this not have been the Case, and yet the
 ' Small-Beer prove sufficiently hopp'd, it may arise
 ' from hence, that the Ale-wort loses what the Small-
 ' Beer gains, and this I am next to prove.

' For this Purpose allow me to observe, that by a
 ' long Immersion in the boiling Wort the Hop is
 ' much expanded, and its Pores dilated to a great
 ' Degree ; its Leaves become in a great Measure like
 ' a Sponge, and reimbibe the embittered Liquor in
 ' which they are soaked. This Liquor which grows
 ' more viscid by the continued Boiling adheres more
 ' closely to the Hop, whose Leaves grow visibly
 ' thicker, and by long continuing in the Wort, be-
 ' come at last surprizingly heavy. To determine
 ' this, I made the following Experiment several
 ' Times with the same Success.

' I took two small Bags, and put into each of them
 ' two Drachms of Hops, and suspended them in a
 ' Copper of Wort about to boil. After the Wort
 ' had boiled half an Hour, I took out the Bags
 ' and weighed their Contents. Those of No. 1.
 ' weighed one Ounce four Drachms and two Scruples.
 ' Those of No. 2. weighed one Ounce six Drachms
 ' and fourteen Grains.

' After this I put them both into the same Copper
 ' in their respective Bags, and kept them suspended
 ' there until the Wort had boiled an Hour and three
 ' Quarters, and then I took them out again, and the
 ' Con-

* Contents of No. 1. weighed an Ounce, six Drachms,
 * and fourteen Grains, and those of No. 2. weighed
 * one Ounce, six Drachms, and two Scruples. And
 * if the Decoction be still continued longer the Hop
 * expands itself still more, and grows still heavier
 * in Proportion.

* From this Experiment it follows, that by long
 * boiling the Hops in the Ale-wort the Wort is ac-
 * tually rob'd of Part of its Bitter — of as much at
 * least, as the Hop increases in Weight by soaking
 * in it, and this embitters the Small-Beer, and what
 * is full as bad, by Degrees the fine acrimonious Bit-
 * ter of the Hop, as I observed before, is changed into a
 * rough and nauseous one. From this Experiment it ap-
 * pears farther why, and under what Circumstances,
 * Hops, which have been used for Ale, not only em-
 * bitter the Small-Beer, but sometimes also add to
 * its Strength. The Reason is, part of the Ale-wort
 * adheres to the Leaves of the Hop, and is by them
 * communicated to the Small-Beer.

* Upon the whole I hope it appears, that the
 * Objection I have now considered, if it proves any
 * Thing, proves no more than this, that when the
 * Small-Beer, which is made of Hops and Malt that
 * have been used for Ale before, is sufficiently bitter,
 * either there has been a Waste of Hops, or the Ale
 * is rob'd of so much of its Bitter as the Small-Beer
 * gains.

* I should now consider the Appearances in the
 * boiling of the Worts, which are commonly received
 * as sure Tokens of its being finished, but the Con-
 * sideration of these will furnish Matter for another
 * Paper.

I am, &c.

R—y W.

N^o. L. *Tuesday, March 21st, 1738.*

GENTLEMEN,

I Am now to consider those Appearances in the Boiling of the Worts, which are commonly reputed certain Signs that they have boiled enough. These are generally reduced to two; The sinking of the Hop, and the breaking of the Worts. Before I enter upon the Consideration of these I shall just observe that some Persons depend upon a third; they boil for a certain Number of Minutes, when these expire they at once give over. It appears at first View that this is a fallacious Rule to judge by.—No Regard is had to the Qualities of either Hop or Malt; which, as I shall have Occasion to shew by and by, require very different Treatment; and when they are not attended to, it is more to be ascribed to Chance than Art, that any Brewing proves successful.

It has usually been taken for granted, that the Hops have communicated all their Virtue to the Wort when they subside or sink unto the Bottom, and that the Boiling of the Worts ought then to cease. But let it be observed that this depends on different Causes. If the Hop be previously infused in the Manner I have before recommended, it will sink sooner, than if such Management has not been used. Sometimes I have observed them to sink in a quarter, and sometimes not under half an Hour's Boiling; and for any Thing I have learned to the contrary, the Hops, even after they have imbibed such a Quantity of Wort as makes them sink, may yet retain some Virtues they communicate by longer boiling. This is certain, that the different Driness of
the

the Hop makes a remarkable Difference in the Time
 of its sinking, and communicating its Virtues to the
 Wort. For a dry Hop is found to imbibe more
 Moisture at Sea, and to grow heavier than a green.
 And it is found in making Infusions with green and
 dry Herbs in warm Water, that the green require
 a longer Time to communicate their Virtues than
 the dry; for the dry more strongly imbibe the Wa-
 ter, and consequently impart their Qualities sooner
 than the green. From hence I think it evident, that
 the drier the Hop the sooner it will sink; and the
 greener it is, the longer it will remain suspended.
 From which, and from what I have before ad-
 vanced, taken together, it follows, that this Appear-
 ance in the Boiling of the Worts cannot be depended
 on as an unerring Rule how long to continue, and
 when to finish. The Guide only to be relied upon
 must be a judicious Taste, improved by Observation
 and Experience. This will best determine how long
 the Bitter of the Hop continues to retain its grate-
 ful Flavour: So long we may with Safety boil, and
 we ought to boil no longer.

What I have said may suffice for this Appearance
 in the Hop, and the rather that the other, viz. the
 Breaking of the Wort will require a more thorough
 Explication, as it has been much talked of, and very
 little understood. This breaking or curdling of the
 Wort is best discovered by taking up a little of it in
 a Bowl, and exposing it to the Cold for two or
 three Minutes. If it begins to break you will find
 the Liquor, which was transparent when put up
 into the Copper, is become grumous and muddy.
 These Grumes by the Continuance of the Boiling
 unite, and forming larger ones, sink down into the
 Bottom of the Vessel and leave the Liquor clear
 again. This is called a complete Breaking or Se-
 paration, and has been almost universally allowed
 for a certain Sign, that the Boiling is duly finished,

‘ short of which you ought not to stop, and beyond which it ought not to continue.

‘ I do allow, indeed, that the sooner this Breaking does appear, the shorter Time the Boiling ought to last. Notwithstanding I am clearly of Opinion, that for the making of good Drink it is neither necessary to wait for this Breaking, nor to regard any Thing else — but that the Hops sufficiently communicate their Virtues to the Wort.

‘ I am well aware this Position will startle many of your Readers at first Sight ; but if they will impartially attend unto some Facts and Experiments, which I shall now relate and candidly examine, I flatter myself they will agree with me in what I have alledged, and plainly see that the Breaking of the Worts is so variable in itself, and in the Circumstances which attend it, that it can never be allow’d a Standard when the Boiling is complete.

‘ Let me then observe, that this Breaking appears at very different Times, from different Circumstances in the Grain, and in the Degree of the Heat of the Water which is used. First as to the Grain. In some Malt it happens in half an Hour, in others not before an Hour and half. For Instance, this Breaking appears much sooner, and in larger Flakes, in old Malt than in new ; nay, in Malt fresh off the Kiln there will be scarce any Breaking at all. In Bear-Malt three Quarters of a Year old, I observed a complete Separation in three Quarters of an Hour, which in Barley-Malt ten Days old did not happen in less than an Hour ; and yet Barley-Malt is observed, *cæteris paribus*, to break sooner, in larger Flakes, and in greater Quantity than Bear-Malt. But again — the larger the Curds are the sooner is the Subsiding or Sinking to the Bottom observed : Now slack dried Malt exhibits its Curds sooner and larger than the high dried ; and grossly ground Malt exhibits larger Curds, whilst what is finer ground produces

‘ produces smaller. Nay, even the Soil itself is found
 ‘ to diversify the Time of Breaking, for the Barley from
 ‘ Chalks and Gravels is found to break sooner than
 ‘ Barley from tough Clays. Thus you see how many
 ‘ Circumstances in the Grain concur to vary the
 ‘ Time of Breaking. To these let me add some
 ‘ others, which arise from the different Degrees of
 ‘ Heat the Water is endued with.

‘ A flacker Liquor is found to exhibit the Curds
 ‘ sooner and of a larger Size, whilst sharper Liquor
 ‘ produceth them thicker and smaller, and not so
 ‘ soon. Slow and quick boiling make also a re-
 ‘ markable Difference; for from the former the Curds
 ‘ are larger, and the Separation consequently sooner
 ‘ than from the latter. The different Size of the Ves-
 ‘ sels in which they are boiled produces also a visible
 ‘ alteration in this Matter. Thus, in a Copper of a
 ‘ Barrel and a Half, the Wort broke in three quar-
 ‘ ters of an Hour, and yet the same Wort in a Cop-
 ‘ per Vessel containing three Pints, tho’ boiled half an
 ‘ Hour longer, did not come to a perfect Breaking at all;
 ‘ but the Curds still continued thick and small. With
 ‘ the same Success I made another Trial in a small
 ‘ Copper of eight Quarts. In two Hours and a Half
 ‘ the Breaking was complete in the larger Copper
 ‘ from whence the Wort was taken, which in the
 ‘ smaller afforded no Signs of Breaking at all. Were
 ‘ I to assign a Reason for this Difference, I should
 ‘ ascribe it to this; that the Union of the Grumes
 ‘ together, in such larger Parts as is necessary to make
 ‘ them subside, is obstructed by the too great Agita-
 ‘ tion of the quicker and more violent Boiling. To
 ‘ the same Cause it is also owing, that the Breaking
 ‘ in large Coppers of forty Barrels happens as soon,
 ‘ if not sooner than in the small ones of a Barrel or
 ‘ two. And to add no more, this is also the Reason
 ‘ why the lessening the Fire, or adding cooler Wort
 ‘ to a smaller Quantity, boiling in a larger Copper

‘ which is long a curdling shall greatly forward the
 ‘ Breaking in it.

‘ From these Experiments it appears, that a Heat
 ‘ too violent hinders the complete Separation, Break-
 ‘ ing or Subsiding of the Grumes. But this is not the
 ‘ only Obstacle; for should the Heat be too remiss
 ‘ or gentle, the like Effects will also be produced.
 ‘ This I learned from the following Experiment. I
 ‘ placed some strong Ale-wort in the Heat of a *Bal-*
 ‘ *neum Mariæ*, viz. in a Jug set in an Iron Pot full
 ‘ of Water. — This Water I kept simmering for
 ‘ four Hours, during all which Time there was but
 ‘ little Curd, and that but small and fine, even at the
 ‘ four Hours End. The Wort itself was then both
 ‘ clear and fine, and indeed much more so, and with
 ‘ a much less Quantity of Curd, than was produced in
 ‘ Ale-wort from the same Malt of the same Strength,
 ‘ exposed in a Vessel to the naked Fire. Now, in
 ‘ each of these Worts there was the same Quantity of
 ‘ mealy Matter contained in their Pores, but the
 ‘ Heat of *Balneum Mariæ* was not sufficient for ex-
 ‘ hibiting it — The mealy Matter being left so fine
 ‘ and subtil as to be kept suspended in the Pores
 ‘ of the Wort without destroying its Transparency.
 ‘ From these two Experiments compared together, it
 ‘ appears that a complete Separation or Breaking in
 ‘ the Wort depends upon a certain Modification of
 ‘ Heat in the Water. — The Observations and Con-
 ‘ clusions from what I have now advanced, I shall re-
 ‘ fer to my next.

I am, &c.

R—y W.

N^o.

N^o. LI. *Tuesday, March 28th, 1738.*

GENTLEMEN,

THE Matter which sinks to the Bottom, upon the Breaking in the Worts, is that which constitutes the Sediment in the Coolers. This is of a mixed Taste, sweet and bitter; and appears to me to be the Precipitation of the mealy Parts of the Malt, and the grosser but bitter ones of the Hop. My Reason for thinking so is this. To two Pounds of this Sediment I put three Pints of Water and boiled them an Hour, and after I had strained the Liquor I fermented it with Barm. This afforded me an Ale tho' very bitter, yet in other Respects by no Means to be despised; besides, this Ale kept good and sound for near two Months. I must farther observe, that the Quantity of this Sediment encreases by long boiling. This appeared by boiling a certain Quantity of Wort for half an Hour, and the same Quantity of the same Wort for two Hours; and after both were set apart for twelve Hours, I found that the Wort which had boiled two Hours deposited double the Quantity of Sediment to that which had only boiled half an Hour. I have only to add under this Head, that I am well assured, that this Sediment thrown into Small-Beer, or into Ale turned sour, will greatly help to enrich the one and restore the other.

From the Observations and Experiments in this and in my foregoing Letter, I beg Leave to draw the following Conclusions: — 1st, Since the Time of this Breaking is so uncertain, sometimes appearing in a Quarter of an Hour, and sometimes not in two or three Hours; if it were fixed as a constant Standard when to finish boiling, it must necessarily be a very variable one, and such as would often

‘ prejudice the Decoction of the Hops by the Evaporation of their more spirituous Parts.

‘ 2dly, If the Time of curdling was allow’d the Standard, since this appears in large Coppers as soon if not sooner than in the small ones, it would follow that we ought to boil in small Coppers as long as in the large ones—but this is proved to be absurd; for by boiling a small Quantity of Wort in a small Copper, as long as a large Quantity in a large one, the former will become as thick as Mum, whilst the latter is of a due Consistence.

‘ 3dly, From the Experiment of the Wort kept simmering in *Balneo Mariæ*, where the Curdling proved but small, and yet the Wort was clear and fine, it appears, that the Breaking of the Wort and the Subsiding of the Grumes, occasioned by the Heat of boiling continued for a certain Time, is no wise essential to the Transparency of the Ale. For the Particles which constitute the Grumes in Ale which breaks are so minute, as to remain suspended in the Pores of this Liquor without destroying or lessening its Transparency. And hence it is that Ale which has only boiled fifteen or twenty Minutes, and is made before the Curdling happens, and Ale which is made by Infusion only, and where of Consequence there is no Curdling at all, shall be as bright and fine, as that which has undergone a perfect Breaking.

‘ 4thly, Since the Matter which subsides upon Breaking chiefly consists of the mealy Parts of the Malt, and grosser bitter Parts of the Hop; and since by long continued Boiling you precipitate these in a large Quantity, it evidently follows, that if you prolong the Boiling after you have extracted the Virtues of the Hop you certainly impoverish the Ale, in Proportion to the Quantity of Sediment which falls to the Bottom.—If to avoid this Evil, you tun up the Ale and so much Sediment together; then the

‘ Drink

‘ Drink will be greatly exposed to all the bad Effects
‘ of repeated Fermentations.

‘ I have now finished what I had to offer on the
‘ Head of Brewing — and have principally confined
‘ my Observations to the Articles of boiling the Hop
‘ and mashing the Malt, and that chiefly in small
‘ Coppers. There are many other Particulars in this
‘ important Affair which deserve a serious Examina-
‘ tion, and will afford abundant Matter for curious
‘ Experiments, to those who are disposed to make a
‘ philosophical Enquiry subservient to the publick
‘ Welfare.—Particularly in the Article of Fermenta-
‘ tion.—Perhaps as much depends on that, as on all
‘ others put together, since an Error here will spoil
‘ the whole. But the Consideration of this, with pro-
‘ per Instructions about Vessels, Cellerage, Bunging,
‘ Bottling, Corking, &c. I must refer to those
‘ whose Inclination, Capacity, and Leisure qualify
‘ them for accomplishing so good a Work.

‘ I shall now take leave of your Readers, and fi-
‘ nish this Letter, by placing in one View a brief
‘ Summary of what I have at large advanced, against
‘ the common Practice of boiling the Worts two,
‘ three, or four Hours.

‘ 1st, It robs the Drink of the warm aromack
‘ Quality of the Hop, and of the native Spirit of the
‘ Malt.

‘ 2dly, It forcibly evaporates the diluting and
‘ active Parts of the Worts, and reduces them to an
‘ inert viscid Decoction approaching to the Con-
‘ sistence of Mum.

‘ 3dly, Long boiling gives a high Colour to the
‘ Drink, and extracts the more terrestrial and grosser
‘ Parts of the Hops.

‘ 4thly, By two or three Hours boiling the Wort
‘ is rob’d of so much of its Bitter, as the Hop re-
‘ attracts to itself.

‘ 5thly,

‘ 5thly, By prolonging the boiling after the beginning Precipitation of the Curds, the Quantity of the Sediment is increased, and the Strength of the Ale proportionably diminished.

‘ 6thly, and lastly, It tends considerably to waste a great deal of Drink and Fire, of Time and Labour.

I am with the greatest Respect,

Gentlemen, &c.

R—y W.

N°. LII. *Tuesday, April 4th, 1738.*

THE Society have declared their Intention of collecting their Observations into Volumes, and fixed the Number of those Papers which are to be included in the first. It will therefore be no surprise to any, that they should avoid at present to enter upon any Subject which may require a Series of Reflections. This is the concluding Paper of the Volume, and upon that Account it were an Impropriety at least to start new Matter in it.

It will be a more natural Conclusion to look back a little on the several Parts of the foregoing Volume, and to dismiss the Reader with some general Reflections, which may engage and perhaps direct him to make a proper Use of it.

A good many of the Papers it contains will appear, on Reflection, to have been designed as short political Essays on the present State of IRELAND, in relation to our Trade especially, and more particularly still to the Linen Manufacture.—What Influence these may have in time to reform general and national Mistakes, to alter the old Customs and inveterate Habits,

Habits, which have hitherto prevented our Prosperity, depends on too many distant Circumstances to be foreseen distinctly. A private Man can do little more than wish that we may be wise enough at last, to engage nationally in national Concerns, and pursue the common Welfare with a truly publick Spirit.

In other Instances it is in the Power of every single Gentleman to make the good Designs of the Society successful. He may introduce with ease the Methods recommended in their Papers among his Tenants and Dependents, or at least by observing them himself afford his Neighbours experimental Proofs of their Expediency.

If Gentlemen will not thus exert themselves, we have certainly writ in vain, and without a hearty Concurrence on their Part our best Endeavours must terminate at last in affording a barren Entertainment to the Curious once a Week.

The common Farmer is not able to run the Risk of an Experiment, and till he sees his Profit so clearly that he cannot mistake it, he is justified by his unhappy Circumstances in rejecting all expensive Innovations. Such are those required to bring Flax Husbandry to the same Perfection which it has attained in *Holland*. — Such in a higher Degree are those which we have recommended in Flax-dressing, and therefore in neither of those Instances can it be reasonably expected, that the Reformation should begin among the poorer Sort.

We are indeed fully satisfied, and every Reader must be so who has read our Instructions with Attention, that whoever first attempts the latter will be amply rewarded by Success. But as regular Flax dressing requires a considerable Fund, and among our common People, not one in many hundreds has even an inconsiderable one, it is an unreasonable Hope that it should take its rise among them. Men of Fortune must necessarily lead the Way, and
by

by publishing the Advantages they have reaped from the Experiment, encourage others to engage in the same Attempt.

'Tis certainly the least the Society can claim in return for their Endeavours, that the Success of their Directions should be imparted to them. And they accordingly desire all true Lovers of their Country, to keep up a Correspondence of this kind, and enable them to recommend their Methods from the happy Fruits of them among our selves.

This is to be understood not only of Flax-husbandry and Flax-dressing, but of all other Subjects also, concerning which the Society has published complete and full Directions. Such are the Banking out of Tides and Floods, the raising of Hops in Bogs, and the making and repairing of High-Roads.

In all these, except we have any where mistaken, and in that Case we shall be always pleased to be set right, there is nothing more in our Correspondents Power, than to observe Instructions with Caution and Exactness, and give us some Account of the Event.—But upon other Subjects a great deal more may be reasonably expected. In our Observations concerning Syder we had not a sufficient Number of approved Experiments to go upon,—much therefore has been left to future Trials, and to direct Gentlemen in making them was a main Part of our Design in Writing. Upon this Account we beg leave to recommend it to their Care to improve upon our Hints by accurate Enquiries, to make Trial of the several Methods by us explained, and watch the Result of each with Diligence and due Attention. The same thing holds in relation to the Essay upon Brewing, it is visibly imperfect, and takes in but a single Branch of that useful and extensive Art.—There is, as in the former Case, room for new Experiments equally important with those already made, and which we hope some Well-wisher to this Country will be inclined

clined to try. Different Degrees of Fermentation have different Effects, and make considerable Alterations in Liquors, otherwise the same. It would be therefore an Enquiry of some Moment, what Degree of it suits Malt Liquors best? How much Barm is necessary to produce it? What Heat may be proper to assist it, and what ill Consequences may arise from the Excess of Fermentation on the one Hand, and the Defect of it on the other?

In Subjects which we have not yet attempted, we beg leave to recommend the same Methods—If Gentlemen would make Experiments, or communicate those they have already made, we could write to more Advantage, and direct those who want Information more securely; and in whatever Shape they are pleased to send their Observations they shall be thankfully received. Those on Tillage will be particularly agreeable; when we resume this Paper in *October* next, that will probably take up our Thoughts, and we hope every one will readily contribute to make our Directions on that important Article as perfect and complete as may be.

We shall now dismiss the Reader with the following Answer to the only Objection which has reached us, against the Papers which have hitherto appeared.

The ingenious Author of the Letters upon Brewing has been sometimes obliged in relating the several Experiments he had made, to use technical Expressions, which were not perhaps universally or distinctly understood. This was strictly unavoidable, without retrenching many curious Observations. Chemical Operations must be chemically described; and were it not for those compendious and significative Phrases, which have obtained in the Language of the Learned, 'tis not to be imagined to what Bulk the Relation of every little Process in Chemistry would swell.

This

This Apology for our Correspondent, is intended also as an Excuse for other Parts of the Society's Performances, which, like his, have been thought by some too Philosophical for common Readers both in the Matter and Expression. The Instances are few. In the Description of Machines in explaining their Operations on the Flax, or the Make and Texture of the Flax itself, the Nature of the Subject made it necessary to recede a little from the general Rule we had laid down of speaking directly to the Vulgar. Every where else it has been our Endeavour to deliver our Instructions in the most familiar Manner, and if possible in those which are to follow we will still adhere more closely to this Rule. *M.*

E R R A T A.

Page 1. Line *ult.* for *implicit* read *explicit*.

F I N I S.



